HP StorageWorks

Command View XP Path Connectivity user guide

Part number: B9357-96116
First edition: March 2005

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Command View XP Path Connectivity user guide

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About this guide

This guide provides information about:

- Viewing paths and the path connectivity health status between hosts and XP disk arrays.
- Viewing information about disk array security settings.
- Displaying host storage data views.
- Using the Path Connectivity BC/CA screens to display the current pairing between volumes and the status of each pair.
- Managing the collection and reporting of host, switch, and disk array data.

Intended audience

This guide is intended for use by customers and HP authorized service providers who are experienced with the following:

- Disk array hardware and software
- Storage systems

Prerequisites

Prerequisites for using this product include:

- The most recent version of Command View XP is installed.
- The HP StorageWorks XP disk arrays are setup.
- Path Connectivity is installed. Refer to the *HP StorageWorks Command View XP installation guide* for more information.
- Refer to the `readme.txt` file on the CD for any last minute announcements.

Related documentation

In addition to this guide, please refer to other documents for this product:

- *HP StorageWorks Command View XP installation guide*
- *HP StorageWorks Command View XP Path Connectivity Command Line Interface (CLI) reference guide*
- *HP StorageWorks Command View XP for XP Disk Arrays user guide*
- *HP StorageWorks Command View XP Command Line Interface (CLI) reference guide*
- *HP StorageWorks Performance Control Export Tool reference guide*
- Command View XP and Path Connectivity online help

These and other HP documents can be found on an HP web site: http://www.hp.com/support/.

Document conventions and symbols

Table 1 Document conventions

Convention	Element
Medium blue text: Figure 1	Cross-reference links and e-mail addresses
Medium blue, underlined text (http://www.hp.com)	Web site addresses
Bold font	• Key names • Text typed into a GUI element, such as into a box • GUI elements that are clicked or selected, such as menu and list items, buttons, and check boxes
Italics font	Text emphasis
`Monospace font`	• File and directory names • System output • Code • Text typed at the command-line
`Monospace, italic font`	• Code variables • Command-line variables
`Monospace, bold font`	Emphasis of file and directory names, system output, code, and text typed at the command-line

WARNING! Indicates that failure to follow directions could result in bodily harm or death.

CAUTION: Indicates that failure to follow directions could result in damage to equipment or data.

IMPORTANT: Provides clarifying information or specific instructions.

NOTE: Provides additional information.

TIP: Provides helpful hints and shortcuts.

HP technical support

Telephone numbers for worldwide technical support are listed on the HP web site: http://www.hp.com/support/.

Collect the following information before calling:

- Technical support registration number (if applicable)
- Product serial numbers
- Product model names and numbers
- Applicable error messages
- Operating system type and revision level
- Detailed, specific questions

For continuous quality improvement, calls may be recorded or monitored.

HP strongly recommends that customers sign-up online using the Subscriber's choice web site at http://www.hp.com/go/e-updates.

- Subscribing to this service provides you with email updates on the latest product enhancements, newest versions of drivers, and firmware documentation updates as well as instant access to numerous other product resources.
- After signing-up, you can quickly locate your products by selecting **Business support** and then **Storage** under Product Category.

HP-authorized reseller

For the name of your nearest HP-authorized reseller:

- In the United States, call 1-800-345-1518.
- Elsewhere, visit http://www.hp.com and click **Contact HP** to find locations and telephone numbers.

Helpful web sites

For third-party product information, see the following vendor web sites:

- http://www.hp.com
- http://www.hp.com/go/storage
- http://www.hp.com/support/
- http://www.docs.hp.com

1 About Path Connectivity

Path Connectivity is a component of HP StorageWorks Command View XP and provides the following features:

- Displays the hosts, Host Bus Adapter (HBA) ports, Fibre Channel switches, XP disk arrays and their ports of a SAN topology, shows the health of each path, and has the ability to diagnose a path to determine the source of the problem.
- Provides XP disk array security information on hosts and HBA ports that are allowed access to disk array resources (such as LUNs or LDEVs), and on the hosts and HBA ports that have not been given permissions, but have potential access.
- Provides mapping of host device files to the physical storage of the disk array and determines which files are using the disk storage.
- Reports Business Copy (BC) and Continuous Access (CA) volume pairing and the status of each pair.

Path Connectivity is not a SAN map utility, such as HP's OpenView Storage Node Manager, and it does not change host or disk array configurations.

In addition to the graphical user interface, there is a Path Connectivity Command Line Interface (CLI). Refer to the *HP StorageWorks Command View XP Path Connectivity Command Line Interface (CLI) reference guide*.

Components

Data Collector service

The Data Collector service executes on the Command View management station and collects data from host agents, Fibre Channel switches, and XP disk arrays.

Host agents

Host agents execute on host systems in the SAN. This monitors the manner in which applications use the data stored in the XP disk array.

Host Agent installation software installs the host agents from the Command View management station, the product CD or the Command View Support page.

HP Enterprise Integrations

HP Enterprise Integrations is HP's implementation of CIM/WEBM, an emerging standard for managing storage information. This technology, when fully implemented, will enhance interoperability between a range of software packages and hardware devices.

The Path Connectivity topology process continuously evaluates the health status of each Fibre Channel path, determines if the status has changed, and posts "events."

Path Connectivity employs an HP Enterprise Integrations agent. When the agent receives events from Path Connectivity, it sends event information to SNMP management stations in the Enterprise Integrations format.

Physical environment

Management station

Path Connectivity runs on the Command View management station.

NOTE: Running multiple instances of Path Connectivity (and therefore multiple Data Collector Service processes) cause the host agent processes, including Path Connectivity diagnostics, to act unpredictably.

HP recommends that you run only one instance of Path Connectivity at a time.

Host agents

Path Connectivity host agents run on various hosts. They are responsible for collecting data-to-LDEV mapping and host HBA information.

The following table shows which operating systems are supported and the host disk space requirements for that operating system.

Table 2 Host disk space requirements

Operating system	Disk space
Windows 2000 (Service Pack 4) Windows Server 2003 Enterprise Edition (IA 32)	120 MB
Windows Server 2003 Enterprise/DataCenter Edition (IA 64)	200 MB
HP-UX 11.00 HP-UX 11.11	Total: 224 MB /opt: 113 MB /etc: 1 MB /var: 110 MB
HP-UX 11.23 (IA-64)	Total: 322 MB /opt: 251 MB /etc: 1 MB /var: 70 MB
HP-UX 11.23 PI (PA-RISC and IA-64)	Total: 322 MB /opt: 251 MB /etc: 1 MB /var: 70 MB
Solaris 8 Solaris 9	Total: 132 MBHos /opt: 65 MB /etc: 1 MB /var: 66 MB

Table 2 Host disk space requirements (continued)

Operating system	Disk space
AIX 5.1 AIX 5.2	Total: 346 MB /opt: 210 MB /etc: 6 MB /var: 65 MB /usr: 65 MB
Red Hat Linux Advanced Server 2.1, 2.4.9 kernel (IA 32) Red Hat Enterprise Linux 3.0 (2.4.21) (IA 32) SuSE Linux Enterprise Server 8 (SLES8)/ United Linux, (2.4.19, 2.4.21 kernel) (IA 32)	Total: 144 MB /opt: 70 MB /etc: 4 MB /var: 70 MB

Supported host bus adapters (HBAs) for Path Connectivity

Refer to the *HP StorageWorks Command View XP installation guide* for a list of HBAs that HP has verified to work properly with Path Connectivity.

NOTE: The SNIA HBA library for the HBA driver provides the HBA WWN so that the Connectivity Health pane in Path Connectivity can map the physical connectivity path(s). When no standard SNIA HBA library is installed, the Connectivity Health pane may display the path as “Point to Point” on some OS. For details on how to download SNIA libraries, please consult the HBA vendors.

Supported switches for Path Connectivity

Refer to the *HP StorageWorks Command View XP installation guide* for a list of switches that HP has verified to work properly with Path Connectivity.

Starting Path Connectivity

To start Path Connectivity, click the **Path Connectivity** button (Path Connectivity) from the Device Launcher window. The Connectivity Health pane is displayed.

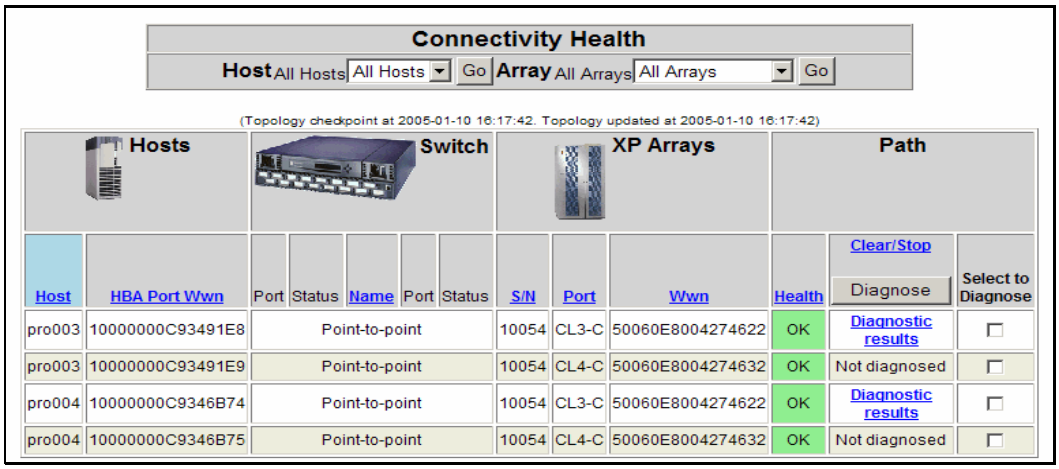


Figure 1 Connectivity Health pane

Path Connectivity has five tabs:

- Connectivity Health
- Array Security
- Host Storage Mapping
- BC/CA
- Administration

About the panes

The majority of the GUI panes contain tables of information. There are also host-data-to-disk-mechanism mapping panes that present the distribution of host data across the disk array's disk mechanisms and back-end processors.

Filtering

The GUI has two drop-down lists ("HOST" and "ARRAY") at the top of each pane. Use these to filter the display by host and disk array serial number. Once you make a selection, click **Go** to regenerate the display.

Sorting

By default, information on the Connectivity Health, Array Security, Host Storage Mapping and BC/CA panes is sorted in host order.

If you click a column heading, the pane will regenerate with the information sorted on that column. A light blue background in the column heading indicates the current sort column. If you click the same column heading again, the information will be sorted in the opposite direction (for example, ascending to descending).

Navigation trees

Several panes have a navigation tree. Use it to select an operation or a device.

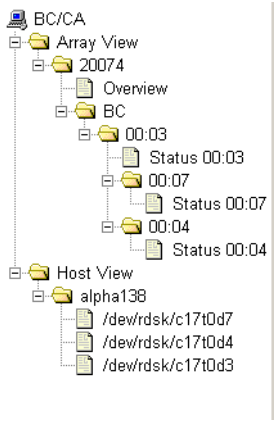


Figure 2 Navigation tree

Printing and exporting

You can print all panes directly from the browser. You can also copy and paste pane information into spreadsheets and other applications. Highlight the rows and columns containing information you want to capture and use your browser's Copy function to place the data on the clipboard. Then use the receiving application's Paste or Paste Special function to paste the data into a target worksheet or document.

Collecting data

By default, disk array information is collected every 30 minutes, BC/CA information is collected every 15 minutes, FC switch information is collected every 15 minutes, and host information is collected every Sunday at 10 p.m. You can adjust this schedule using the Data Collection Schedule pane under the **Administration** button.

You can be sure that Path Connectivity is working correctly by collecting data immediately. Follow this procedure.

1. Be sure the host agents are installed and running. Refer to the *HP StorageWorks Command View XP installation guide*.
2. Use the **Administration > Collect Now** pane to discover all hosts within the firewall or subnet. If the Command View management station and the hosts are located on different subnets, use the **Administration > Host Discovery - Host Mgmt** pane to add the hosts.
3. Be sure the disk arrays you want to monitor have been added to Command View. Locate each disk array on the **Array Manager > Device Administration** pane and be sure the **Manage Array** check box is selected. Note: The disk array you want to monitor should finish at least one data retrieval cycle for Path Connectivity (in particular, Connectivity Health) to work correctly.
4. Be sure you have added any switches, using the **Administration > Switch Mgmt** pane. Path Connectivity cannot report and diagnose paths if the switches are not added.
5. Click **Administration > Data Collection > Collect Now**. Select all check boxes and click **Collect Now**.
6. Wait for 5 to 10 minutes. You should see new path connectivity data on the screens.

2 Connectivity Health

The Connectivity Health pane provides a table of the paths and path connectivity health status between hosts and XP disk arrays.

The Path Connectivity topology system shows the shortest and active path from a host HBA port to an XP disk array port. Switch zoning may affect the data reported on the window. The topology is derived from Path Connectivity supported switches, host agent HBA data, and data from Command View managed disk arrays.

NOTE: If no Path Connectivity data is displayed, refer to "Collecting data" on page 15 or the troubleshooting section in the *HP StorageWorks Command View XP installation guide*.

Connectivity Health pane

To navigate to the Connectivity Health pane, click the **Path Connectivity** tab and then click the **Connectivity Health** button.

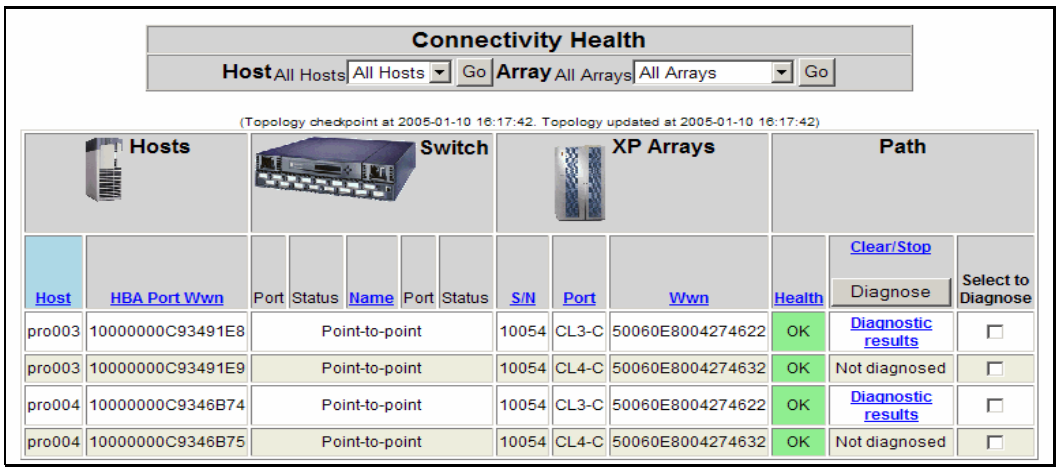


Figure 3 Connectivity Health pane

The pane displays information in four sections: Hosts, Switch, XP Arrays, and Path.

The Hosts section contains the following columns:

- **Host**: The IP address or DNS name of the host system connected to the disk array that has a host agent running.
- **HBA Port WWN**: The Host Bus Adapter's port World Wide Name (16 hex characters).

The Switch section contains the following columns:

- **Port**: The switch port to which the HBA port is connected.
- **Status**: State of the port.
- **Name**: Switch IP address or DNS name.

- **Port**: The switch port to which the disk array port is connected.
- **Status**: State of the port.

If you briefly hold the mouse pointer over the switch image at the top of the column, the switch name is displayed.

If a host is connected directly to a disk array or the fabric data is incomplete, the switch name is listed as "Point-to-point." If an image of two switches is displayed instead of a switch name, see "Paths containing multiple ISLs" on page 19 for a further explanation.

The XP Arrays section contains the following columns:

- **S/N**: Disk array serial number.
- **Port**: Disk array port where the switch is connected.
- **WWN**: WWN of the disk array's port (16 hex characters).

The Path section contains the following columns:

- **Health**: Indicates the overall health or quality for the path from Host HBA Port WWN to Array Port. The path health (status) will be one of the following:
  - **OK**: Device files exist and at least one device file is accessible with pinglun. Fiber Channel switch status and port status are OK.
  - **WARNING**: One of two Fiber Channel switch ports does not show inSync status. Pinglun service on host is not responding.
  - **CRITICAL**: Device files are not accessible with pinglun. Fiber Channel switch or port status is not inSync.
  - **INSUFF_DATA**: Insufficient data. There are no device files on the host for path. There is no pinglun data.
- **Clear/Stop link**: Clears and stops diagnoses in progress for all paths.
- **Diagnose button**: Starts diagnosing the path selected by checking the check box on the right of the path.
- **Diagnostic results link**: As each path is diagnosed, each cell under the Diagnose button displays a Diagnostic Results link.

  Clicking the **Diagnostic Results** link displays a Path Diagnostic Results report at the bottom of the pane. The Path Diagnostic Results report is described on page 19.

NOTE: There is a Windows AutoPath limitation in the functionality of the AutoPath software API. AutoPath does not diagnose the status of an individual path. The only status AutoPath returns to Path Connectivity is the status of a physical device. In other words, if there are two paths to the same LUN from the same physical device (2 HBAs, 2 ports on the XP disk array), the API will return a valid physical device status even if one of the paths has been broken. However, if a supported switch is connecting both paths from the host to the array, the switch can then identify the status of an individual path, and the correct status will be reflected in the Connectivity Health pane.

- **Select to Diagnose check boxes and button**: Each path has a check box for making individual path selections. When a check box is selected, clicking the **Diagnose** button will begin a diagnosis process for that path.

NOTE: You can only select one path to be diagnosed at a given time.

Paths containing multiple ISLs

The Connectivity Health pane also provides additional information about paths containing multiple ISLs. If a host HBA port has a path through multiple switches (the path contains one or more ISLs), an image of two switches is displayed instead of a switch name. Click the image to display the Path Detail window, which shows a graphical representation of the path, including the host, switches, and disk array.

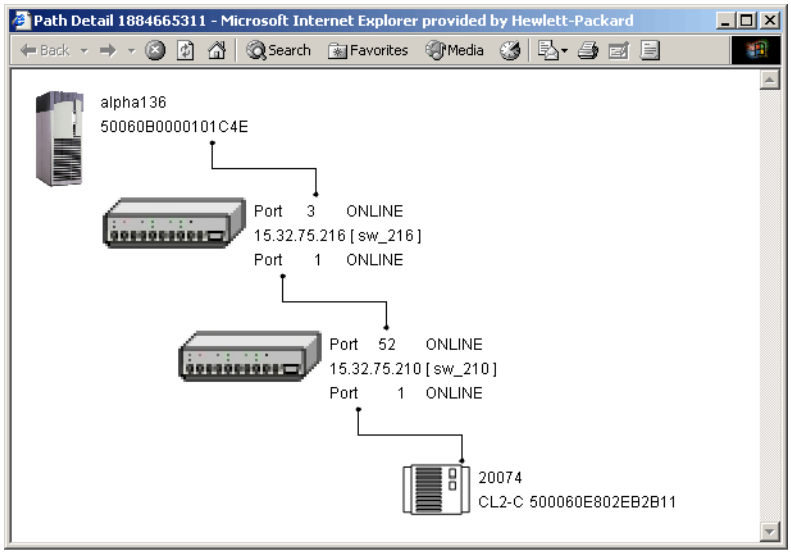


Figure 4 Path Detail window

Path diagnostic report

As each path is diagnosed, each cell under the **Diagnose** button displays a Diagnostic Results link. Clicking the Diagnostic Results link displays a Path Diagnostic Results report at the bottom of the pane.

NOTE: Netscape browsers will display the Path Diagnostic Results report in a new window instead of the same window.

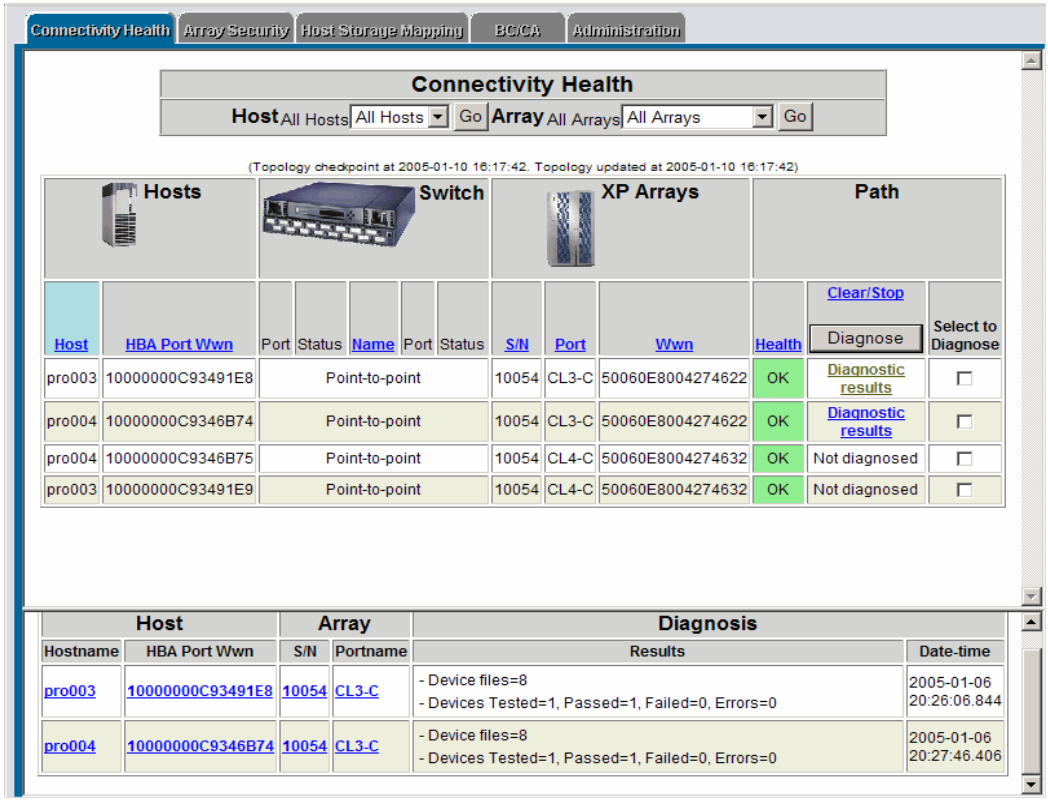


Figure 5 Path Diagnostic report

The Connectivity Path Diagnostics Results report displays the columns of information as shown in the previous figure.

The table displays the host's name, host's HBA port WWN, disk array serial number, and disk array port name, each of which are links that return you back to the main Connectivity Health pane when clicked. The text in the Results cell displays findings that affect the health of the path. The table also displays the date and time the results were returned.

3 Array Security

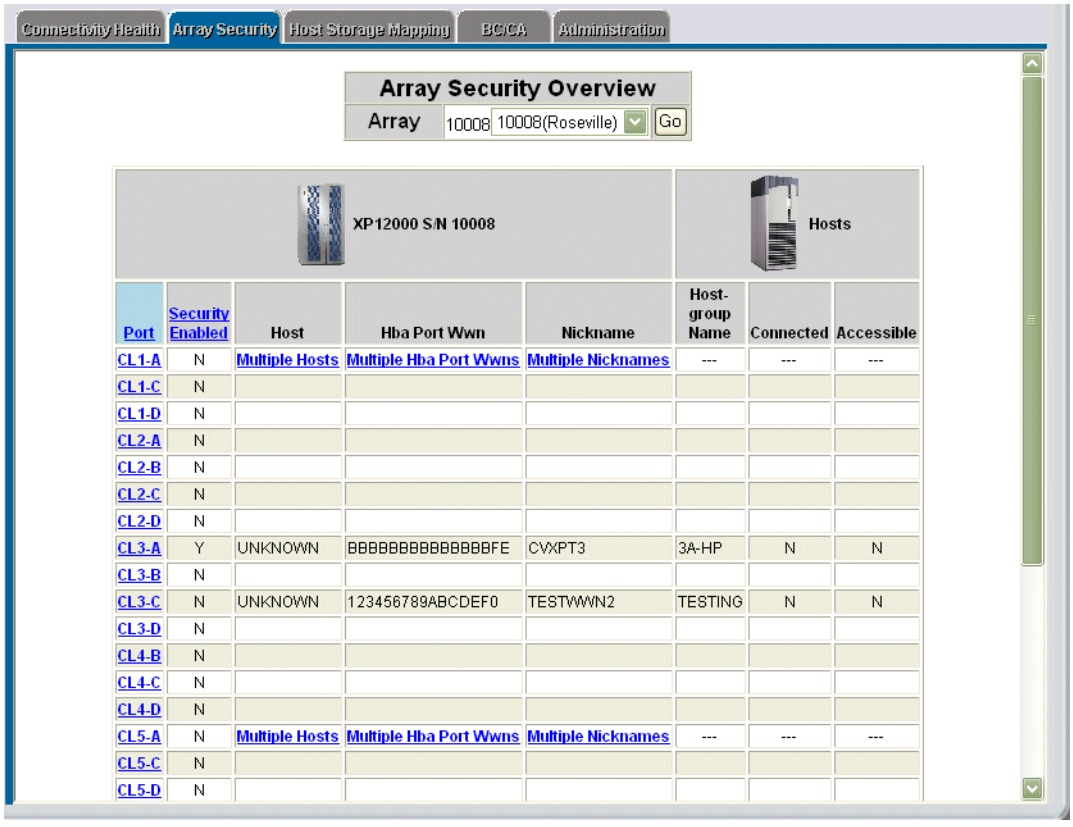
Clicking the **Array Security** button displays a series of panes that report the disk array security settings for ports, host groups and LUNs. The panes also show which hosts have array port security authorization and potential access to disk array ports, LUNs, and LDEVs.

NOTE: If no Path Connectivity data is displayed, refer to "Collecting data" on page 15.

Array Security Overview pane

To navigate to the Array Security Overview pane, click the **Path Connectivity** tab and then click the **Array Security** button.

The Array Security Overview pane displays the port, LUN security settings and host HBA world wide names that have Fibre Channel access to the ports on a disk array.



Port	Security Enabled	Host	Hba Port Wwn	Nickname	Host-group Name	Connected	Accessible
CL1-A	N	Multiple Hosts	Multiple Hba Port Wwns	Multiple Nicknames	---	---	---
CL1-C	N						
CL1-D	N						
CL2-A	N						
CL2-B	N						
CL2-C	N						
CL2-D	N						
CL3-A	Y	UNKNOWN	BBBBBBBBBBBBBBFE	CVXPT3	3A-HP	N	N
CL3-B	N						
CL3-C	N	UNKNOWN	123456789ABCDEF0	TESTWWN2	TESTING	N	N
CL3-D	N						
CL4-B	N						
CL4-C	N						
CL4-D	N						
CL5-A	N	Multiple Hosts	Multiple Hba Port Wwns	Multiple Nicknames	---	---	---
CL5-C	N						
CL5-D	N						

Figure 6 Array Security Overview pane

The Array Security Overview pane has the following fields:

- **Port**: Port names on the disk array.
- **Security Enabled**: Port security status. Enabled (Y), disabled (N).

- **Host**: The names of hosts whose HBA port world wide names have been added to one or more host groups on the disk array port. Also displayed are hosts that have a physical path to the disk array port.
- **HBA Port WWN**: Host HBA port world wide names.
- **Nickname**: Nicknames assigned to host HBAs.
- **Host-group Name**: Host group names on the port.
- **Connected**: Indicates whether the HBA port has a physical path to the disk array port on the SAN (Y/N).
- **Accessible**: Indicates whether or not the host HBA port can access resources on the disk array port (Y/N).

Multiple instances/no instances

All of the fields except the Port and Security Enabled fields are blank when there are no host group HBA port world wide names defined or when there are no HBA ports with a path to the disk array port.

The Host-group Name, Connected, and Accessible fields display dashes ("---") when there is more than one HBA port world wide name associated with a disk array port.

The Multiple... link indicates that there are multiple HBA port world wide names associated with a disk array port. Clicking the link causes the browser window to split horizontally, displaying a detailed listing, as shown in the following figure.

NOTE: Netscape browsers will display the detailed listing of host information in a new window instead of the same window.

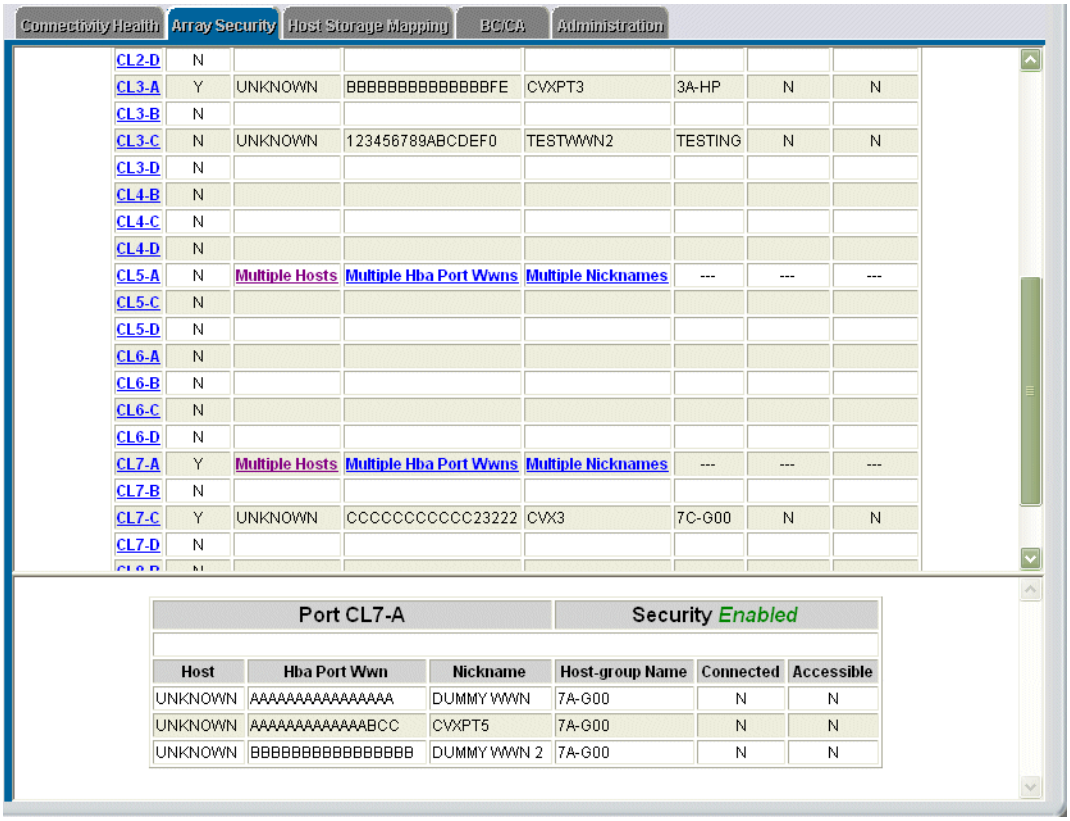


Figure 7 Detailed listing of the Array Security Overview pane

The Host field can display a single host name or the Multiple Hosts link. If the HBA port world wide name cannot be resolved to the host name or the host's IP address, then "UNKNOWN" is displayed in the Host field. If there is more than one HBA port world wide name with a path to the port or there is more than one HBA port world wide name in all of the host groups on the port, then the Multiple Hosts link is displayed.

The Hba Port Wwn field can display a single host HBA port world wide name or the Multiple Hba Port Wwns link. If there is more than one HBA port world wide name with a path to the port or there is more than one HBA port world wide name in all of the host groups on the port, then the Multiple Hba Port Wwns link is displayed.

The Nickname field can display a single HBA port nickname or the Multiple Nicknames link. If there is more than one HBA port world wide name with a path to the port or there is more than one HBA port world wide name in all of the host groups on the port, then the Multiple Nicknames link is displayed.

The Host-group Name field can display a single disk array port host group name (nickname) or dashes ("---") when there is more than one HBA port world wide name associated with the disk array port. When there are HBA port world wide names in the SAN that have a path to the port, but are not a member of any host group, then the Host-group field displays "Not host-group member."

Navigation

- To select a different disk array, use the drop-down list of disk array serial numbers.
- To navigate to the Array Security Port View pane, click the **Port** link.

Array Security Port View pane

The Array Security Port View pane shows the host group names, LUN IDs, CUs, and LDEV IDs for a disk array port.

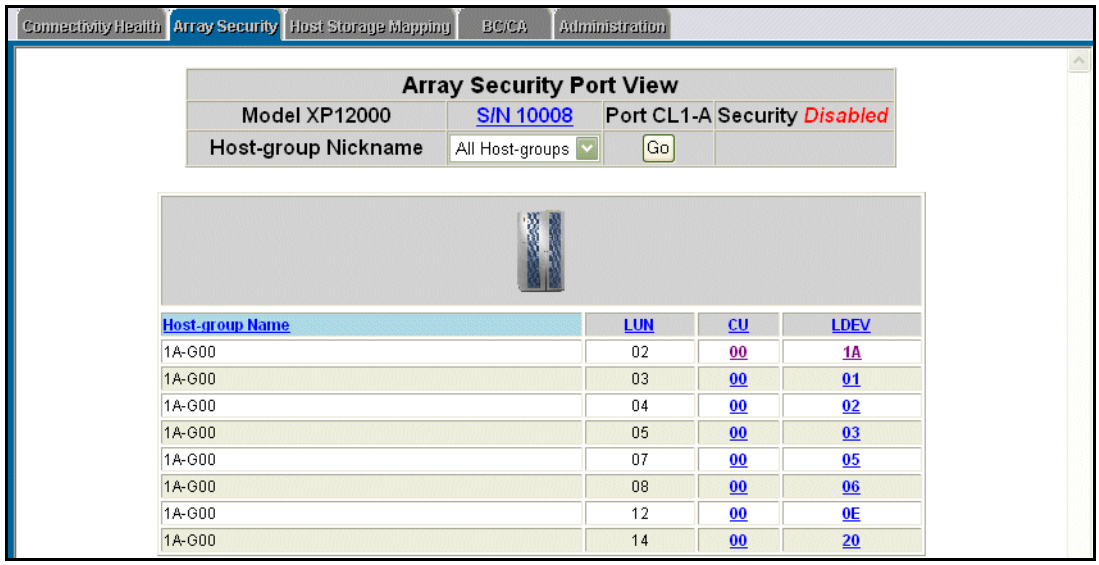


Figure 8 Array Security Port View pane

The Array Security Port View pane has the following fields at the top of the pane:

- Disk array model number
- Disk array serial number
- Disk array port number
- Port security state (enabled or disabled)

- Drop-down list box, with the host group nicknames for the port

The display columns are:

- Host-group Name
- LUN
- CU
- LDEV

Only host groups that have LUN definitions are displayed.

Navigation

- To filter the display to a single host group name, select from the drop-down list of host group names and click **Go**.
- To navigate to the Array Security Overview pane, click the disk array serial number link at the top of the pane.
- To navigate to the Array Security LDEV View pane, click a LUN ID, CU ID, or LDEV ID.

Array Security LDEV View pane

The Array Security LDEV View pane shows which disk array ports provide a path to an LDEV, the port security status, the host group member hosts, their SCSI target and LUN id, and the hosts that have a potential path to the LDEV.

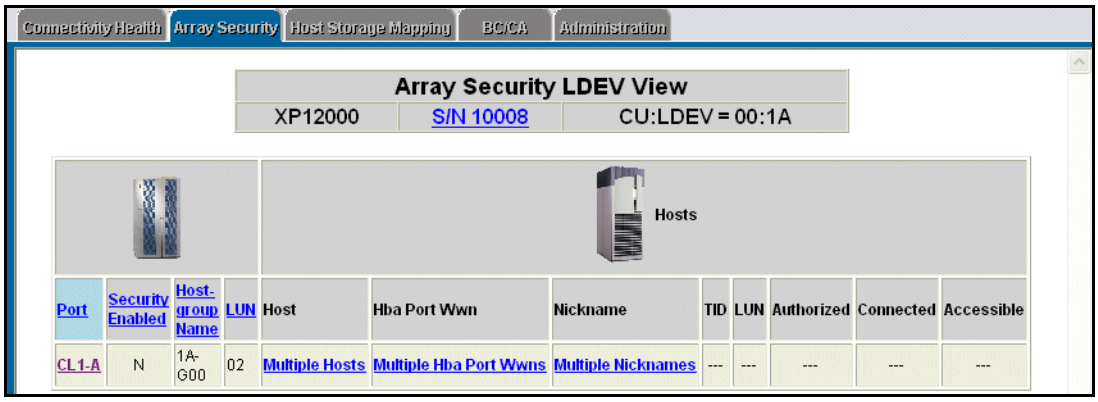


Figure 9 Array Security LDEV View pane

The Array Security LDEV View pane has the following fields at the top of the pane:

- Disk array model
- Disk array serial number
- CU and LDEV

The display columns are:

- Port names that provide a path to the LDEV.
- Port security status. Enabled (Y) or disabled (N).
- Host group names on the port.

- Hosts whose HBA world wide names have been added to one or more host groups on the port. Also displayed are hosts whose HBA WWNs have a physical path to the disk array port.
- Host HBA port world wide names.
- Nicknames assigned to host HBA port world wide names.
- TID – host SCSI target ID.
- LUN – host SCSI LUN ID.
- The Authorized field shows whether or not the world wide name is authorized to access the resources available through the disk array port (Y/N).
- The Connected field shows whether the HBA port has a physical path to the disk array port (Y/N).
- The Accessible field shows whether or not the host HBA port can access resources on the disk array port (Y/N).

Multiple instances/no instances

All of the fields except Port, Security Enabled, and Host-group Name are blank when there are no host group HBA port WWNs defined or when there are no HBA ports with a path to the disk array port.

The Host-group Name field can display a single disk array port host group name (nickname). When there are HBA port world wide names in the SAN that have a path to the port, but aren't a member of any host group, the Host-group field displays "Not host-group member."

The Multiple… link indicates that there are multiple HBA port world wide names associated with a host group name. If you click the link, the window will split horizontally to display the detailed listing.

NOTE: Netscape browsers will display the detailed listing of host information in a new window instead of the same window.

The Host field can display a single host name or the Multiple Hosts link. If the HBA port WWN cannot be resolved to the host name or to the host's IP address then "UNKNOWN" is displayed. If there is more than one HBA port WWN with a path to the disk array port host group name, the field displays the Multiple Hosts link.

The Hba Port Wwn field can display a single host HBA port world wide name or the Multiple Hba Port Wwns link. If there is more than one HBA port WWN with a path to the disk array port, the field displays the Multiple Hba Port Wwns link.

The Nickname field can display a single host HBA port world wide name or the Multiple Nicknames link. If there is more than one HBA port WWN with a path to the disk array port, the field displays the Multiple Nicknames link.

The TID, LUN, Authorized, Connected, and Accessible fields display dashes ("---") when there is more than one HBA port world wide name associated with the disk array port.

Navigation

- To return to the Array Security Overview pane, click the disk array serial number link at the top of the pane.
- To go to the Array Security Port View pane, click a disk array port name link.

4 Host Storage Mapping

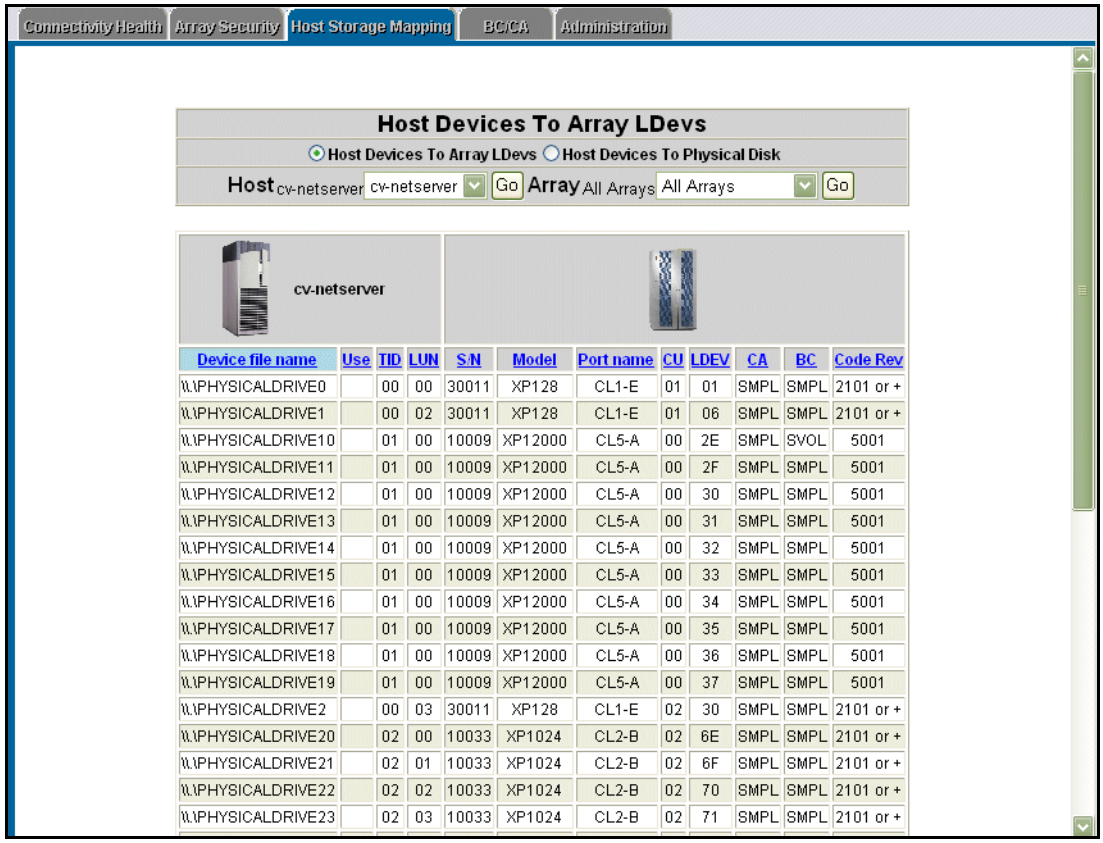
Host Storage Mapping provides these panes:

- Host Devices To Array LDevs pane (page 27)
- Host Device To Physical Disk pane (page 28)
- Host Devices To Physical Disk Mech View pane (page 30)
- DKU View pane (page 31)

To navigate to the Host Storage Mapping panes, click the **Path Connectivity** button from the Device Launcher window and then click the **Host Storage Mapping** tab.

Host Devices To Array LDevs pane

Use the Host Devices To Array LDevs pane to determine which LDEV each host device file is mapped to.



Device file name	Use	TID	LUN	S/N	Model	Port name	CU	LDEV	CA	BC	Code Rev
\\.\PHYSICALDRIVE0		00	00	30011	XP128	CL1-E	01	01	SMPL	SMPL	2101 or +
\\.\PHYSICALDRIVE1		00	02	30011	XP128	CL1-E	01	06	SMPL	SMPL	2101 or +
\\.\PHYSICALDRIVE10		01	00	10009	XP12000	CL5-A	00	2E	SMPL	SVOL	5001
\\.\PHYSICALDRIVE11		01	00	10009	XP12000	CL5-A	00	2F	SMPL	SMPL	5001
\\.\PHYSICALDRIVE12		01	00	10009	XP12000	CL5-A	00	30	SMPL	SMPL	5001
\\.\PHYSICALDRIVE13		01	00	10009	XP12000	CL5-A	00	31	SMPL	SMPL	5001
\\.\PHYSICALDRIVE14		01	00	10009	XP12000	CL5-A	00	32	SMPL	SMPL	5001
\\.\PHYSICALDRIVE15		01	00	10009	XP12000	CL5-A	00	33	SMPL	SMPL	5001
\\.\PHYSICALDRIVE16		01	00	10009	XP12000	CL5-A	00	34	SMPL	SMPL	5001
\\.\PHYSICALDRIVE17		01	00	10009	XP12000	CL5-A	00	35	SMPL	SMPL	5001
\\.\PHYSICALDRIVE18		01	00	10009	XP12000	CL5-A	00	36	SMPL	SMPL	5001
\\.\PHYSICALDRIVE19		01	00	10009	XP12000	CL5-A	00	37	SMPL	SMPL	5001
\\.\PHYSICALDRIVE2		00	03	30011	XP128	CL1-E	02	30	SMPL	SMPL	2101 or +
\\.\PHYSICALDRIVE20		02	00	10033	XP1024	CL2-B	02	6E	SMPL	SMPL	2101 or +
\\.\PHYSICALDRIVE21		02	01	10033	XP1024	CL2-B	02	6F	SMPL	SMPL	2101 or +
\\.\PHYSICALDRIVE22		02	02	10033	XP1024	CL2-B	02	70	SMPL	SMPL	2101 or +
\\.\PHYSICALDRIVE23		02	03	10033	XP1024	CL2-B	02	71	SMPL	SMPL	2101 or +

Figure 10 Host Devices To Array LDevs pane

This pane also shows the use of the device file, the host target ID, disk array LUN ID, disk array serial number, disk array model, disk array port name, CU, LDEV, CA status, BC status, and the disk array firmware revision.

For Windows hosts, the disk array firmware revision may display “2101 or +” for some versions of array firmware and “0117 or +” for an XP48/XP512. For other host operating systems, the exact firmware revision will be displayed.

If Auto Path is installed and running on the same Windows host as the Path Connectivity host agent, this pane will display multiple entries for the same device. In addition, the Use column displays “hpap.”

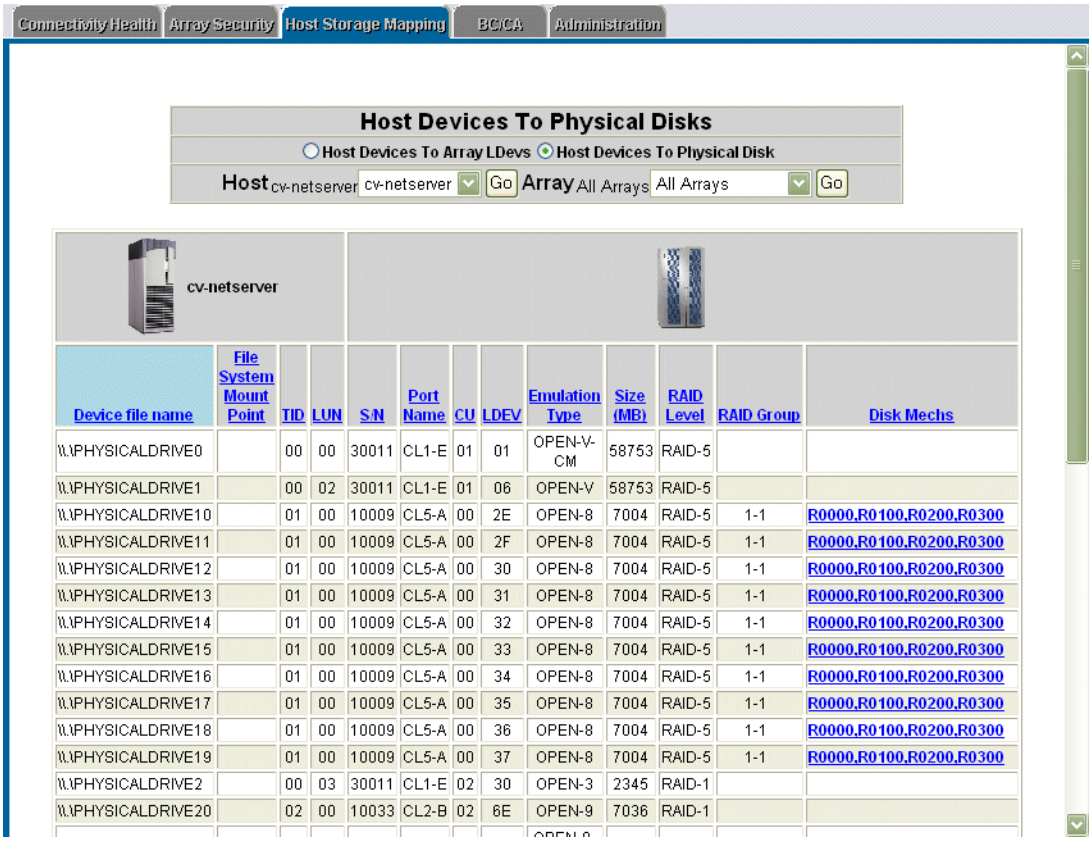
Each entry represents a path to the same LDEV through a different disk array port. For example, if you have two paths to the same LDEV through ports CL1-A and CL2-A, you will see two entries for the same device with different disk array ports.

Navigation

- To display a particular host, select from the drop-down list of host names and click **Go**.
- To display a particular disk array, select from the drop-down list of disk array serial numbers and click **Go**.
- To go to the Host Devices To Physical Disks pane, click the **Host Devices To Physical Disk** button.
- To return to this pane from another pane, click the **Host Devices To Array LDevs** button.

Host Devices To Physical Disks pane

The Host Devices To Physical Disks pane provides a view of the mapping of host device files to disk mechanisms.



Device file name	File System Mount Point	TID	LUN	S/N	Port Name	CU	LDEV	Emulation Type	Size (MB)	RAID Level	RAID Group	Disk Mechs
\\.\PHYSICALDRIVE0		00	00	30011	CL1-E	01	01	OPEN-V-CM	58753	RAID-5		
\\.\PHYSICALDRIVE1		00	02	30011	CL1-E	01	06	OPEN-V	58753	RAID-5		
\\.\PHYSICALDRIVE10		01	00	10009	CL5-A	00	2E	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE11		01	00	10009	CL5-A	00	2F	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE12		01	00	10009	CL5-A	00	30	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE13		01	00	10009	CL5-A	00	31	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE14		01	00	10009	CL5-A	00	32	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE15		01	00	10009	CL5-A	00	33	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE16		01	00	10009	CL5-A	00	34	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE17		01	00	10009	CL5-A	00	35	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE18		01	00	10009	CL5-A	00	36	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE19		01	00	10009	CL5-A	00	37	OPEN-8	7004	RAID-5	1-1	R0000,R0100,R0200,R0300
\\.\PHYSICALDRIVE2		00	03	30011	CL1-E	02	30	OPEN-3	2345	RAID-1		
\\.\PHYSICALDRIVE20		02	00	10033	CL2-B	02	6E	OPEN-9	7036	RAID-1		

Figure 11 Host Devices To Physical Disks pane

The table shows device file name, file system mount point, TID, LUN, disk array serial number, port name, CU, LDEV, emulation type, size, RAID level, RAID group, and disk mechs.

In case of the 4D + 4D parity groups, two RAID groups and two sets of disk mechs are reported in the RAID Group and Disk Mechs columns.

If there are device files associated with an XP128/XP1024/XP12000 that not managed by Command View, this pane will display blank fields because the Data Collector Service is unable to collect data from an unmanaged XP128/XP1024/XP12000.

NOTE: No Disk Mech links will be shown for XP 12000 external volumes.

NOTE: For disk arrays with one or more XP512 DKU (disk) cabinets with an XP1024 DKC controller, specify the left and right DKU type in the Command View Device Administration pane to see the correct RAID group and disk mech information on this pane.

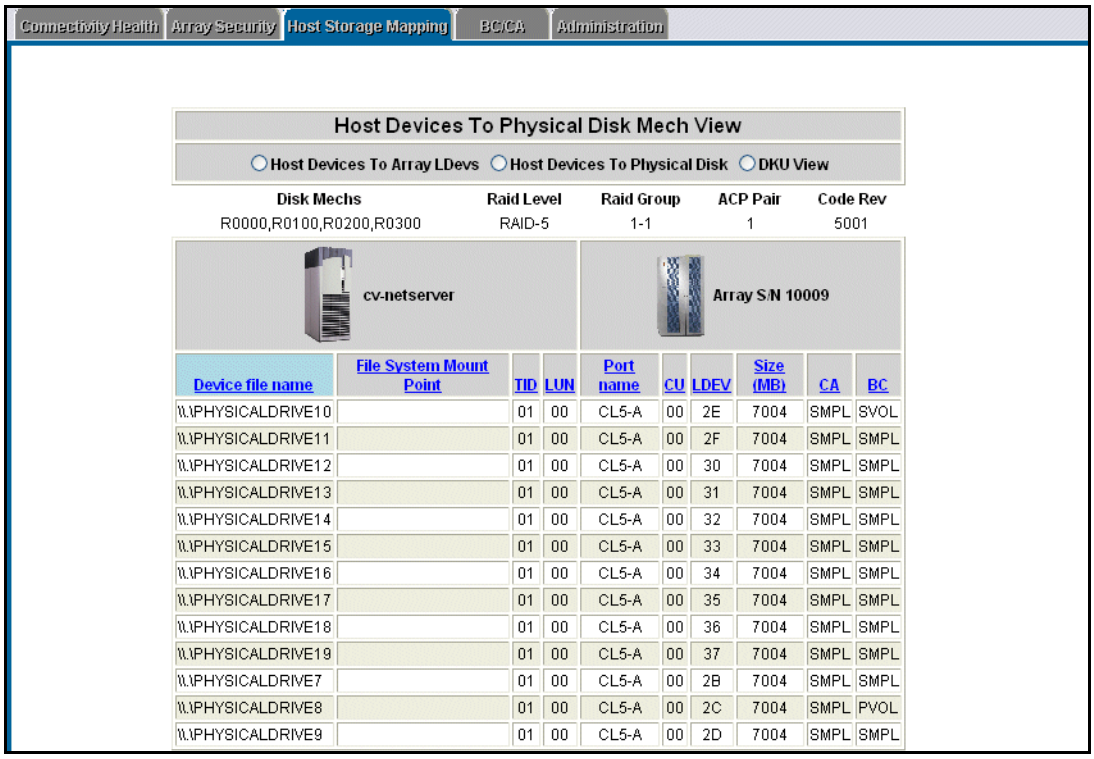
NOTE: If you have assigned a drive letter to a disk of a Windows system and you do not see the drive letter under the mount point column of the drive, then the drive is probably a dynamic drive. Command View currently does not support dynamic disks. However, you will still see most of the information about the drive.

Navigation

- To display physical mapping of the selected host to array LDEVs, select the **Host Devices to Array LDevs** option.
- To display physical mapping of the selected host to disk mechanisms, select the **Host Devices to Physical Disk** option.
- To display a particular host, select from the drop-down list of host names and click **Go**.
- To display a particular disk array, select from the drop-down list of disk array serial numbers and click **Go**.
- To return to this pane from another pane, click the **Host Devices To Physical Disk** option button.
- To go to the Host Devices To Array LDevs pane, click the **Host Devices To Array LDevs** option button.
- Each set of disk mechs (mechanisms) is a link that displays the Host Devices To Physical Disk Mech View pane.

Host Devices To Physical Disk Mech View pane

The Host Devices To Physical Disk Mech View pane shows a list of device files that belong to the RAID group listed at the top of the pane.



Device file name	File System Mount Point	TID	LUN	Port name	CU	LDEV	Size (MB)	CA	BC
\\.\PHYSICALDRIVE10		01	00	CL5-A	00	2E	7004	SMPL	SVOL
\\.\PHYSICALDRIVE11		01	00	CL5-A	00	2F	7004	SMPL	SMPL
\\.\PHYSICALDRIVE12		01	00	CL5-A	00	30	7004	SMPL	SMPL
\\.\PHYSICALDRIVE13		01	00	CL5-A	00	31	7004	SMPL	SMPL
\\.\PHYSICALDRIVE14		01	00	CL5-A	00	32	7004	SMPL	SMPL
\\.\PHYSICALDRIVE15		01	00	CL5-A	00	33	7004	SMPL	SMPL
\\.\PHYSICALDRIVE16		01	00	CL5-A	00	34	7004	SMPL	SMPL
\\.\PHYSICALDRIVE17		01	00	CL5-A	00	35	7004	SMPL	SMPL
\\.\PHYSICALDRIVE18		01	00	CL5-A	00	36	7004	SMPL	SMPL
\\.\PHYSICALDRIVE19		01	00	CL5-A	00	37	7004	SMPL	SMPL
\\.\PHYSICALDRIVE7		01	00	CL5-A	00	2B	7004	SMPL	SMPL
\\.\PHYSICALDRIVE8		01	00	CL5-A	00	2C	7004	SMPL	PVOL
\\.\PHYSICALDRIVE9		01	00	CL5-A	00	2D	7004	SMPL	SMPL

Figure 12 Host Devices To Physical Disk Mech View pane

The top of the pane shows the disk mechs, RAID level, RAID group, ACP pair, and code revision. The header area of the table shows the host name and disk array serial number. The table shows the device file name, file system mount point, TID, LUN, port name, CU, LDEV, size in MB, CA pair status, and BC pair status.

Navigation

- To go to the Host Devices To Array LDevs pane, click the **Host Devices To Array LDevs** option button.
- To go to the Host Devices To Physical Disks pane, click the **Host Devices To Physical Disk** option button.
- To go to the DKU View pane, which displays where the disk mechs are located in the disk array cabinet, click the **DKU View** option button.

DKU View pane

The DKU View pane shows where the disk mechs are located in the disk array's DKU cabinet. The DKU View pane provides array maps for XP512/XP48, XP1024/XP128 and XP12000 only.

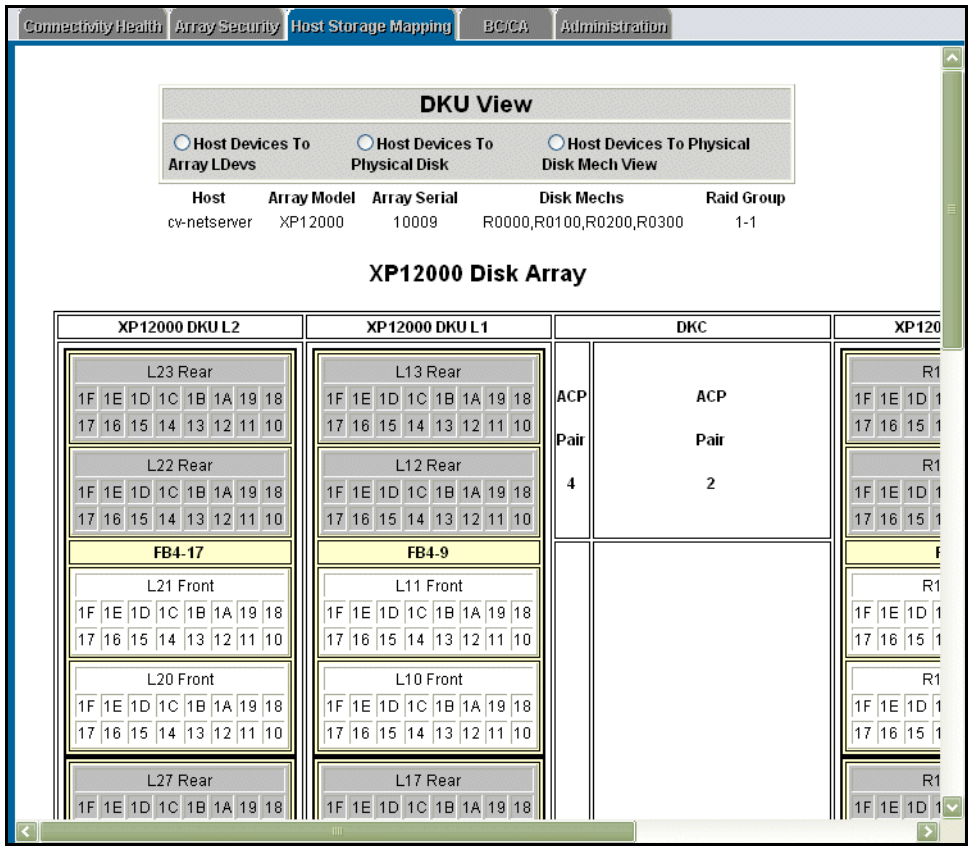


Figure 13 DKU View pane

This pane shows where in the cabinet the disk mechs for the selected host device file are located. Disk mechs, which are marked in green, are the targets for the device file.

NOTE: For disk arrays with one or more XP512 DKU (disk) cabinets with an XP1024 DKC controller, specify the left and right DKU type in the Command View Device Administration pane to see the correct disk mech image.

Navigation

- To go to the Host Devices To Array LDevs pane, click the **Host Devices To Array LDevs** option button.
- To go to the Host Devices To Physical Disks pane, click the **Host Devices To Physical Disk** option button.

5 BC/CA (Business Copy/Continuous Access)

Business Copy (BC) is an application designed to duplicate data between volumes in the same disk array. Continuous Access (CA) duplicates volumes between different (and often distant) disk arrays. In either case, source volumes (P-VOLs) and target volumes (S-VOLs) are paired with each other.

The Path Connectivity BC/CA panes display the current pairing between volumes and the status of each pair.

CAUTION: A host agent must be running on at least one host that has visibility to the volumes involved in BC/CA pairing. Additionally, the host must have a command device file configured, and the command device must have visibility to the volumes.

An XP48 or XP512 must have a unique command device file for each host with a host agent installed. The command device file must be visible by only one host to prevent contention and possible data corruption within Path Connectivity.

Finally, Command View must be set to manage the disk array with the BC/CA pairs.

To navigate to the BC/CA panes, click the **Path Connectivity** tab and then click the **BC/CA** button.

BC/CA Overview pane

The BC/CA Overview pane shows the host names, ports on the disk array where the host is connected, and BC and CA use. The BC and CA columns indicate if the disk array port has a volume that is being used in a BC or CA pair (Y/N).

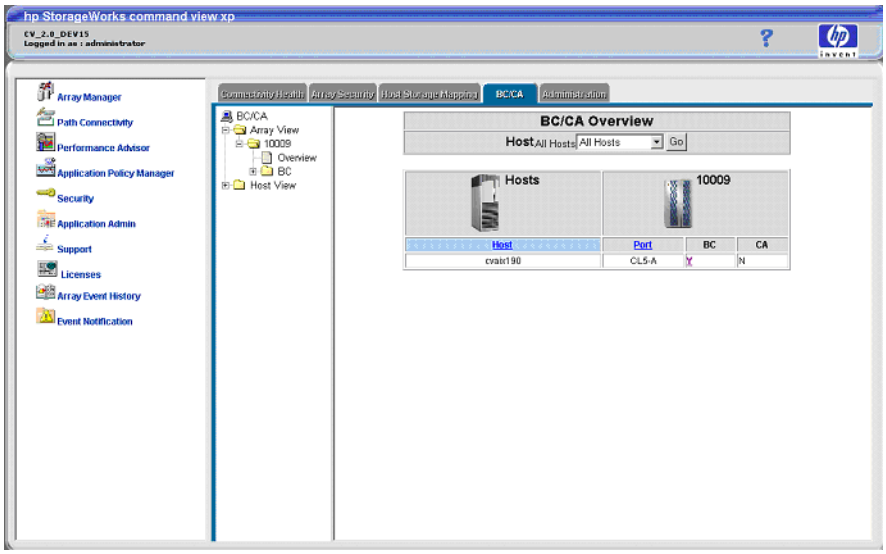


Figure 14 BC/CA Overview pane

Navigation

- To display another host, select from the **Host** drop-down list and click **Go**. The host list is comprised of all hosts in the SAN with a host agent running.
- To display the BC/CA Port View, click the **Y** link.

Navigation tree

The left frame of the pane contains a navigation tree, which displays the Array View and the Host View.

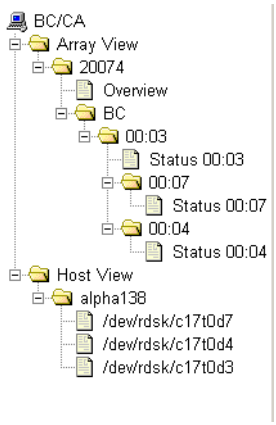


Figure 15 Navigation tree

Array View

The Array View contains a list of disk arrays using BC/CA. Each disk array has an Overview menu item and BC and CA sections. Clicking the Overview menu item will display the BC/CA Overview page for the disk array to which that the menu item belongs. The BC section has a hierarchical view of BC pairs, starting with primary volumes (P-VOLs) at the top of the BC pair tree. A volume is described by its CU:LDEV number. The secondary volumes (S-VOLs) cascade from the primary volumes. The CA section lists volumes being used in CA pairs. The Status menu item links to the Pair Status Information details pane.

Host View

Host View contains a list of hosts with device files mapped to a BC or CA volume. Clicking a host reveals the list of device files. Clicking the device file displays the corresponding BC/CA volume's Pair Status Information details pane.

BC/CA Port View pane

Clicking the **Y** link in the BC or CA column of the overview pane, displays the BC/CA Port View pane.

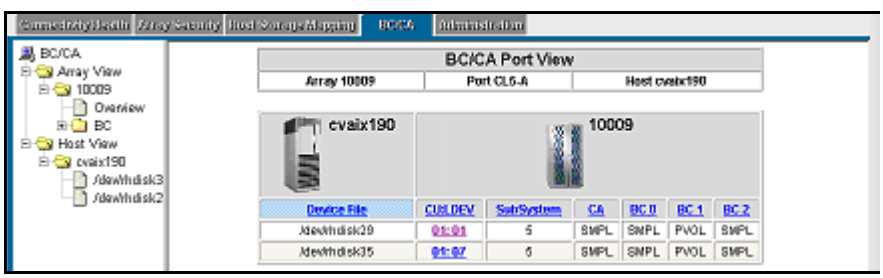


Figure 16 BC/CA Port View pane

At the top of the pane is the selected disk array, port, and the host with visibility to the volumes on the port.

The table shows host device files, the CU:LDEVs mapped to the device files, and subsystem. The BC/CA volume status fields (CA, BC0, BC1, and BC2) describe the current pair status of the LDEV.

- **P-VOL**: The primary volume containing the data to be copied.
- **S-VOL**: The secondary volume, which receives data from the primary volume.
- **SMPL**: A volume in the simplex state, not in use by BC or CA. Also, SMPL describes volumes in a P-VOL/S-VOL pair after the pair has been split.

Navigation

- To narrow the focus to a volume centric view, click a CU:LDEV link. The system displays the BC/CA Pair Status Information pane for the selected CU:LDEV.

BC/CA Pair Status Information - Details view

The BC/CA Pair Status Information pane presents a detailed BC/CA view for a selected volume. To go to this pane, either click a CU:LDEV in the BC/CA Port View pane or use the navigation tree.

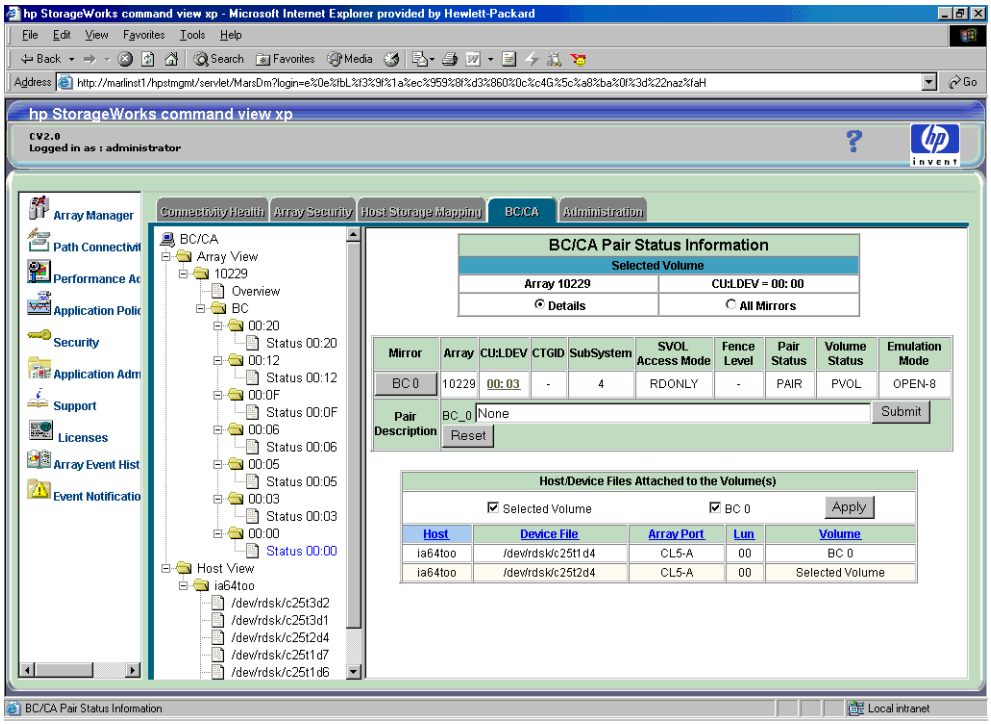


Figure 17 BC/CA Pair Status Information pane

The top of the pane shows the selected disk array and CU:LDEV. Located below this are two option buttons used to display either the Details or All Mirrors view. The Details view describes immediate pair volume status. The All Mirrors view displays all volumes that mirror the same data as the selected volume.

The Pair Status section consists of a table containing the following items:

- **Mirror buttons**: The name of the button indicates the mirror mode and mirror number. Click the button to change the content of the Pair Description field to describe the selected mirror mode and mirror number.
- **Array**: Disk array serial number.
- **CT Group ID**: The consistency group to which an Async CA volume pair is assigned.

- **SubSystem**: Subsystem identification number.
- **SVOL Access Mode**: RDONLY, NOREAD or WRITE.
- **Fence Level**: The level for selecting rejection of write I/O requests from the host.
- **Pair Status**: Status of the selected volume or pair (SMPL, COPY, or PSUS). If the pair is suspended, the suspend type is displayed.
- **Volume Status**: P-VOL indicates a primary volume, containing data to be copied. S-VOL indicates a secondary volume, which receives the data from the primary volume.
- **Emulation Mode**: One of the open or mainframe emulation types.
- **Pair Description**: Lets you view and modify the description of the current pair. The buttons in the Mirror column change the focus of the Pair Description field to that of the selected button. The default description is "None." To change the description, enter a description in the field and click **Submit**.

The Host/Device Files Attached to the Volume(s) section consists of a table at the bottom of the pane. This table displays the host and device files attached to the selected volume, and the selected volume's corresponding BC/CA pairs.

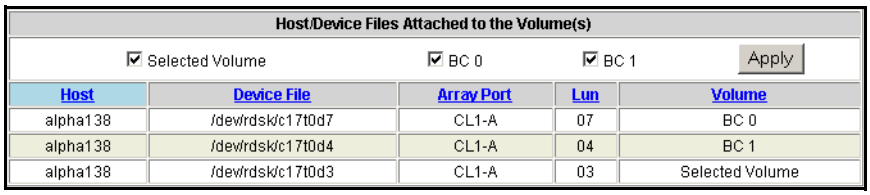


Figure 18 Host/Device Files Attached to the Volume(s) Section

Select or clear the check boxes in the table to filter according to pair mirror type and click **Apply**.

Navigation

- To go to the BC/CA Pair Status Information - All Mirrors view, click the **All Mirrors** option button.

BC/CA Pair Status Information - All Mirrors view

The All Mirrors view displays a list of all volumes and host/device files that mirror the same data as the selected volume.

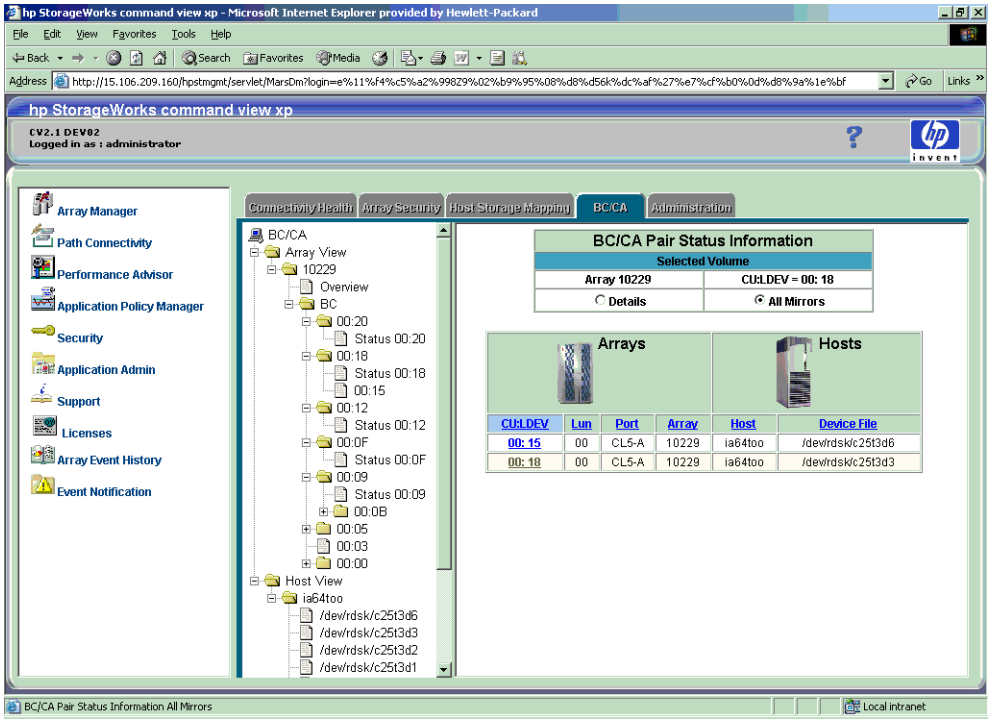


Figure 19 All Mirrors view

Navigation

- To navigate to the BC/CA Pair Status Information - Details view, click the **CU:LDEV** link for that CU:LDEV.
- To go to the BC/CA Pair Status - Details view, click the **Details** option button.

6 Administration

Clicking the **Administration** button displays a series of panes that let you manage collection and reporting of host, switch, and disk array data. The panes allow you perform these functions:

- Collect data immediately (page 40)
- Set a schedule for data collection (page 40)
- Delete collected data (page 42)
- Add or remove hosts manually (page 43)
- Set host discovery options (page 43)
- Add switches (page 44)
- Review the Path Connectivity event log (page 45)
- Add host information (page 46)
- Import a file of host information (page 46)
- Delete host information (page 48)
- Review host information (page 49)
- Add or modify the use of a device file (page 49)

The left frame of the panes contains a navigation tree used to select the administration function you want to perform.

Data Collection panes

Data Collection - Collect Now pane

Use the Data Collection - Collect Now pane to collect data immediately without waiting for the regularly scheduled data collection.

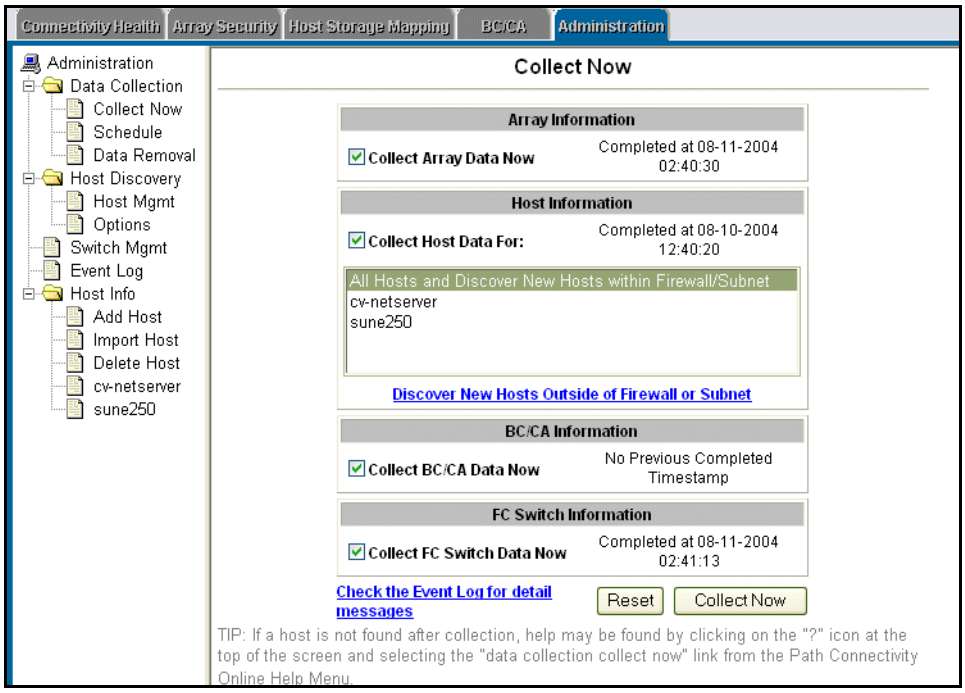


Figure 20 Data Collection - Collect Now pane

To collect data from one or more categories but not from all categories, clear the check box in front of the unwanted category (Array, Host, BC/CA, or FC Switch) and click **Collect Now**. By default, disk array, host, BC/CA, and switch data is collected.

This pane also contains the following items:

- **Host Information**: You can choose one or more hosts to collect information from. By default, information is collected from all hosts visible since last host data collection.
- **Discover New Host Outside of Firewall or Subnet**: This links to the Host Discovery page to detect a host outside of the Command View management station's firewall or subnet.
- **Collect Now button**: Click this button to begin data collection. The pane refreshes every 30 seconds after you click to show data collection progress.
- **Check the Event Log for detail messages**: This links to the Event Log pane, where you can see recent changes in path connectivity.

Data Collection - Schedule pane

Use the Data Collection - Schedule pane to set the data collection schedule for disk arrays, hosts, switches, and BC/CA. You can also use this pane to disable data collection for a particular device.

By default, disk array information is collected every 30 minutes; BC/CA information every 15 minutes; FC switch information every 15 minutes; and host information every Sunday at 10 p.m. The default setting for the Disable check boxes is clear (data collection enabled).

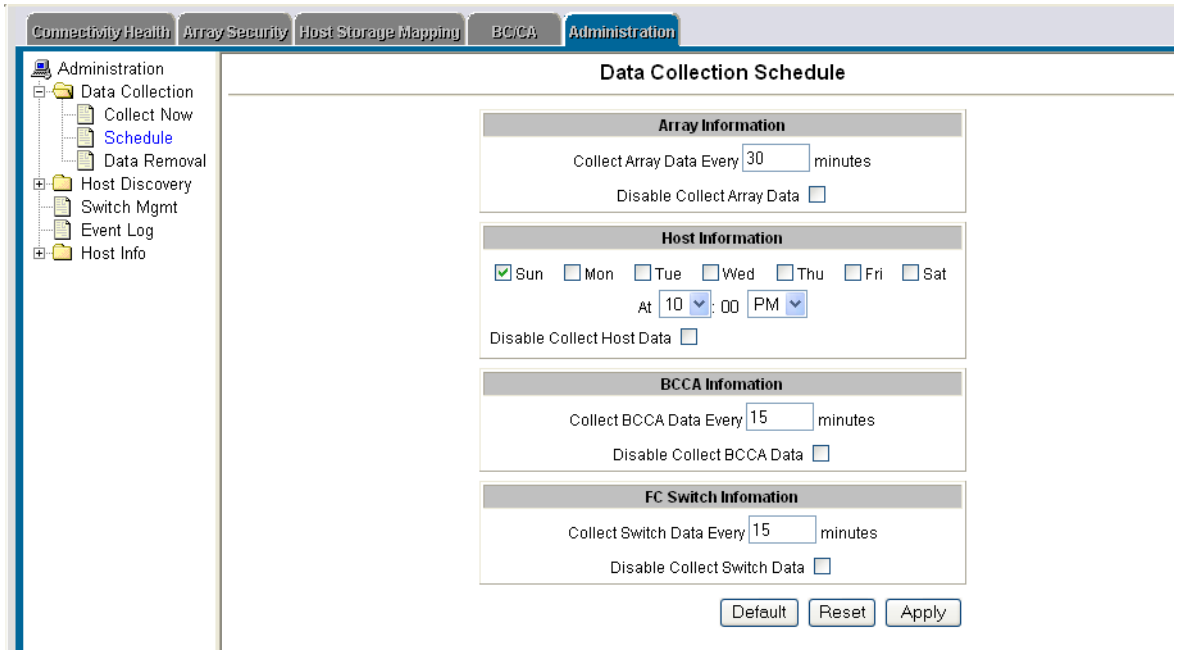


Figure 21 Data Collection - Schedule pane

Changing the data collection frequency

1. Array Information: Enter a value (collection frequency in minutes) in the entry field. Select or clear the Disable Collect Array Data check box. Selecting the check box stops array data collection.
2. Host Information: Select one or more check boxes, indicating days of the week to collect host data. Enter the data collection time in the time entry fields. Select or clear the Disable Collect Host Data check box. Selecting the check box stops host data collection.
3. BC/CA Information: Enter a value (collection frequency in minutes) in the entry field. Select or clear the Disable Collect BCCA Data check box. Selecting the check box stops BCCA data collection.
4. FC Switch Information: Enter a value (collection frequency in minutes) in the entry field. Select or clear the Disable Collect Switch Data checkbox. Selecting the check box stops switch data collection.
5. Click **Apply**.

The **Reset** button resets the entry fields to their previous values. The **Default** button sets the schedule to its default values.

Data Collection - Data Removal pane

Use the Data Collection - Data Removal pane to control the retention of historical data collected from the data sources.

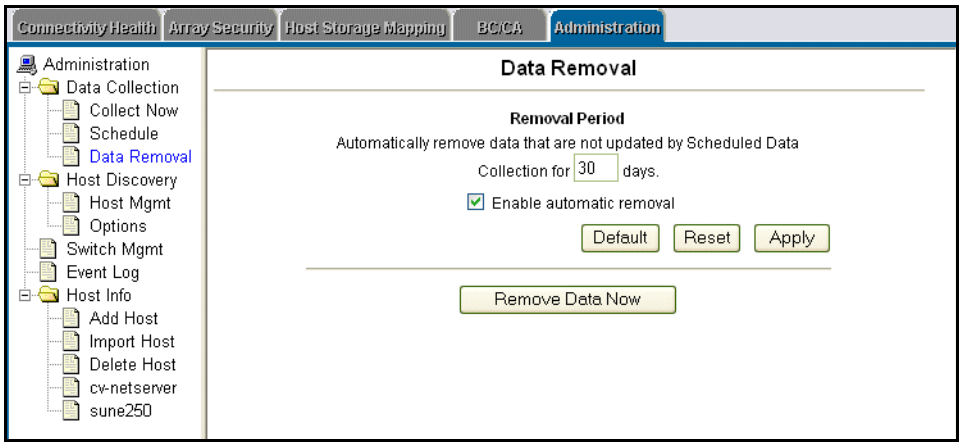


Figure 22 Data Collection - Data Removal pane

When a host, switch or disk array cannot be located for its periodic data collection, Path Connectivity doesn't immediately assume it has been removed from the SAN. In the Connectivity Health panes, the connectivity path or paths associated with the device in question are marked in red to indicate a potential problem. Eventually, if the device has really been removed from the SAN, Path Connectivity must purge the historical data it has about the device so it will no longer show up in Path Connectivity panes.

By default, Path Connectivity purges data after 30 days of lost communication with a device. Use this pane to adjust the default threshold for purging. You can also enable or disable automatic removal.

This pane contains the following items:

- **Removal Period**: Sets the number of days data not updated will stay in the database before removal.
- **Enable automatic removal check box**: Enables or disables automatic removal. If you disable automatic removal, data will accumulate in the database until you execute a Remove Now operation.
- **Remove Now button**: Deletes the older data immediately.
- **Default button**: Resets default settings (30 days, automatic removal enabled).
- **Reset button**: Resets previous settings.
- **Apply button**: Processes the new settings.

Host Discovery panes

Host Discovery - Host Management pane

Use the Host Discovery - Host Management pane to add a host to Path Connectivity. Use this pane if you didn't use the remote deployment tool to install the host agent, or the host is not in the same subnet as the Command View management station.

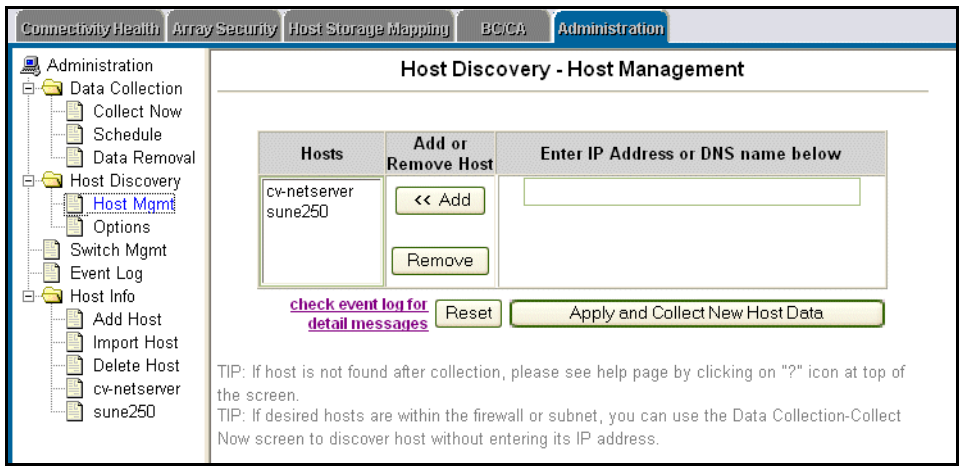


Figure 23 Host Discovery - Host Management pane

Adding a host

1. Enter the host IP address or DNS name, and click **Add**. The list on the left displays the host.
2. Click **Apply and Collect New Host Data**.

Removing a host

1. Click a host and click **Remove**. The host is removed from the list.
2. Click **Apply and Collect New Host Data**.

Host Discovery - Options pane

Use the Host Discovery - Options pane to set the following host discovery options:

- **Maximum host discovery time**: The maximum time to discover the hosts inside the same firewall/subnet.
- **Maximum number of hosts to discover**: The maximum number of hosts Path Connectivity will discover inside the same firewall/subnet when you collect data by clicking the **Collect Now** button on the Data Collection - Collect Now pane.

  This number excludes the number of hosts that have been deployed using the remote deployment method. The IP addresses of the hosts added through this method are saved and will be rediscovered again if the appropriate host agents are running on them. To avoid rediscovering these hosts, remove the host's IP address from the *AuthorizedClients.dat* file located in the `C:\HPSS\CVmanagementserver\config` directory.

- **Host data collection timeout value**: The maximum amount of time to wait for a host to respond.

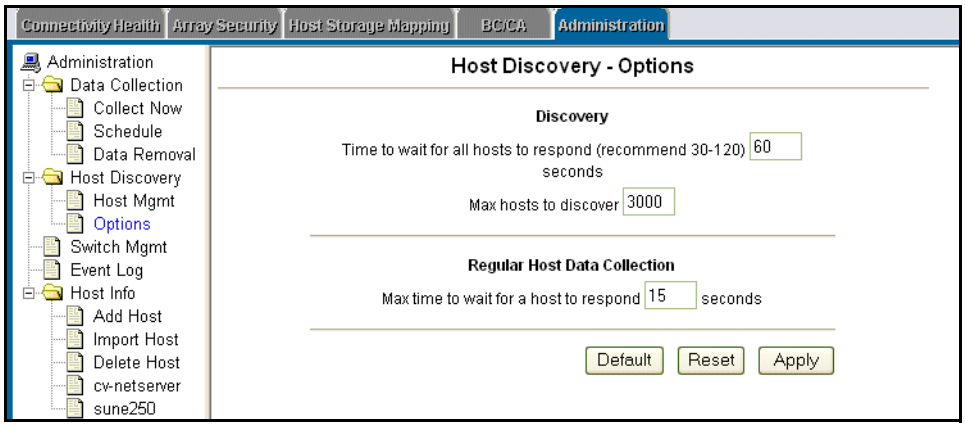


Figure 24 Host Discovery - Options pane

Setting host discovery options

1. Enter the discovery time, the maximum number of hosts, and timeout value in the appropriate fields.
2. Click **Apply**.

Fibre Channel Switch Management pane

Path Connectivity collects connectivity information from Fibre Channel switches in the SAN. Use the Fibre Channel Switch Management pane to add and remove switches.

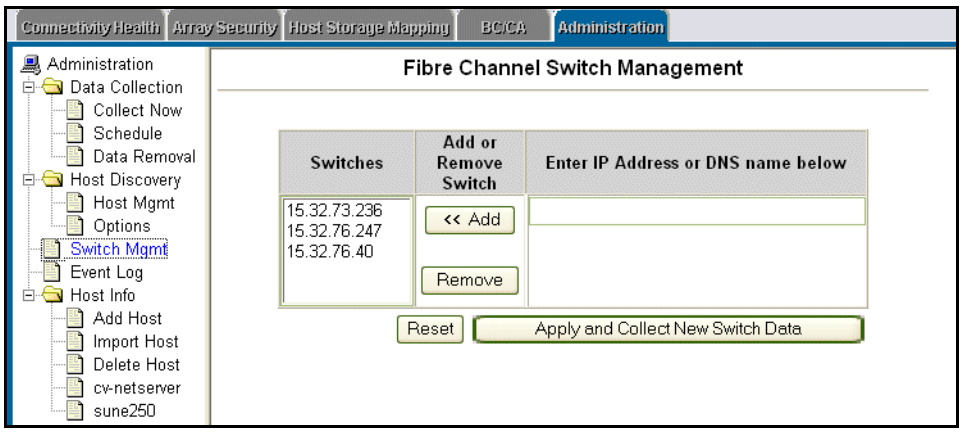


Figure 25 Fibre Channel Switch Management pane

Adding a switch

1. Enter the IP address or DNS name, and click **Add**. The list on the left displays the switch.
2. Click **Apply and Collect New Switch Data**.

The Data Collection Service will try to communicate with a newly-added switch on its next scheduled switch polling cycle.

Deleting a switch

1. Click a switch and click **Remove**. The switch is removed from the list.
2. Click **Apply and Collect New Switch Data**.

When a switch is removed, Path Connectivity will remove any information collected from that switch. Connectivity provided by the switch will no longer be known to Path Connectivity and therefore will not be reflected in Path Connectivity panes.

Event Log pane

Use the Event Log pane to see recent Path Connectivity events, stored in the Data Collection Service event log file. The default sort order is date and time, with the most recent events listed first.

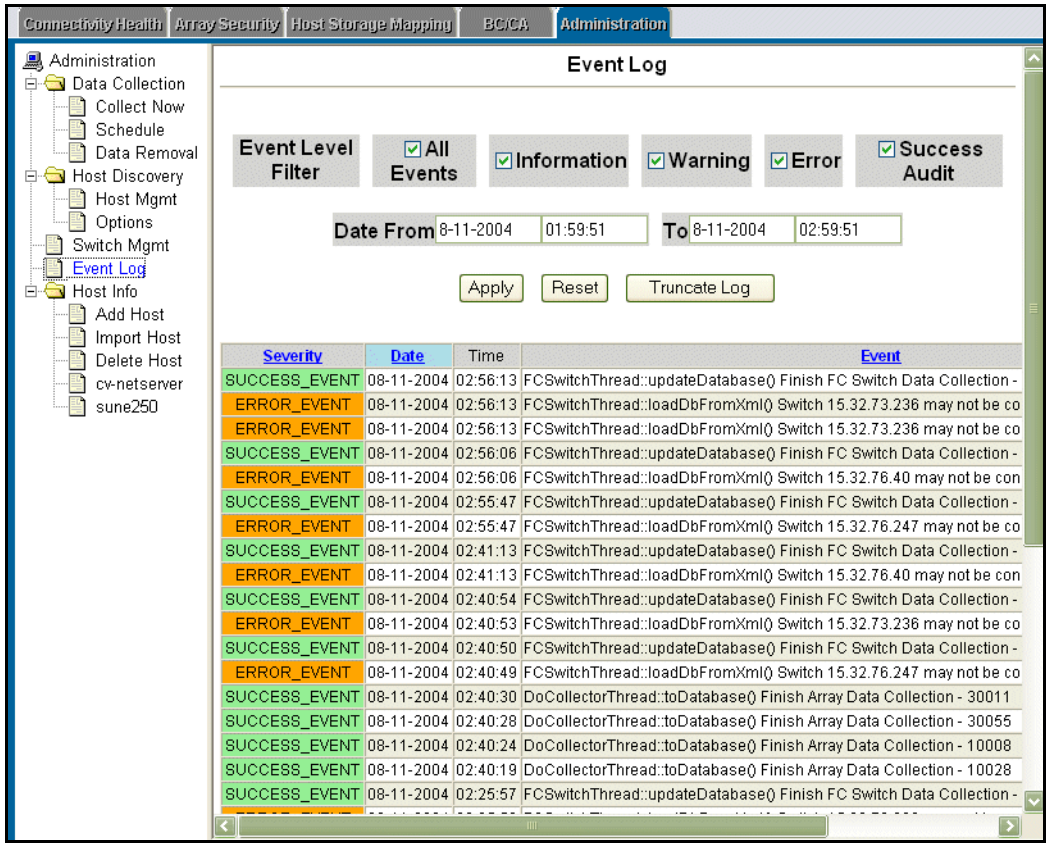


Figure 26 Event Log pane

This pane contains the following filter options:

- To filter by severity level, select or clear the **Event Level Filter** check boxes and click **Apply**.
- To filter by date, enter From and To dates and click **Apply**.

The table displays severity level (Information, Warning, Error, Success Audit) of the event, date, time, and description of the event.

Erasing the event log

To reset the log (truncate it to zero bytes), click **Truncate Log**.

Host Information panes

Host Info - Add Host pane

Use the Host Info - Add Host pane to create a host record manually. You can enter host information manually if you choose not to install a remote agent on the host or if the host OS is not yet supported. In addition, use the host information pane to enter descriptive information.

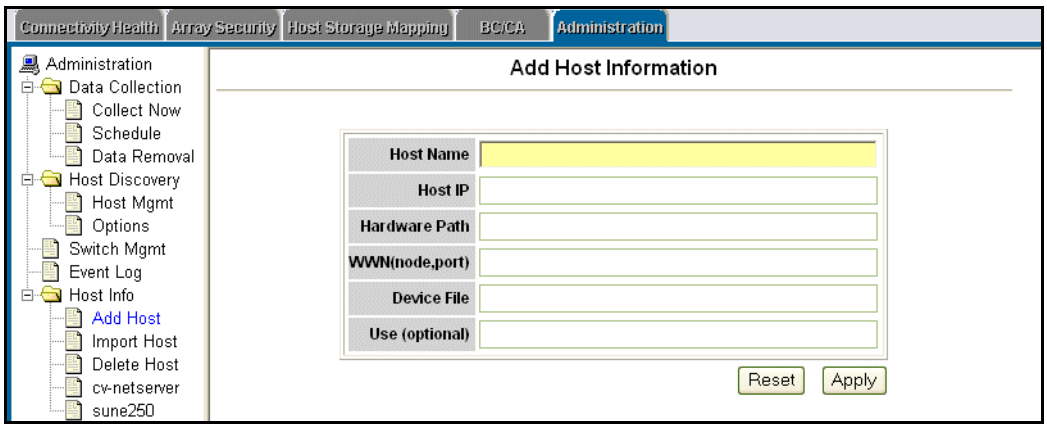


Figure 27 Host Info - Add Host pane

Adding a host

1. Enter the host name, host IP address, hardware path, host's WWN name (in the node,port format), and device file name.
2. Enter the use. For example, enter the application or file system that uses the device file.
3. Click **Apply**.

Host Info - Import Host Information pane

Use the Host Info - Import Host Information pane to store records of host information without having to install host agent software on a host. Normally, you can install the host agent on a host to collect data to populate the Path Connectivity database automatically. However, if you cannot install the host agent on their hosts, you can use the Host Info - Import Host Information pane to enter information collected with other methods.

To add a group of host records to the Path Connectivity database, import host information from a comma separated variable (CSV) file. See "Host import CSV and configuration files" on page 47 for information about the structure of the CSV file.

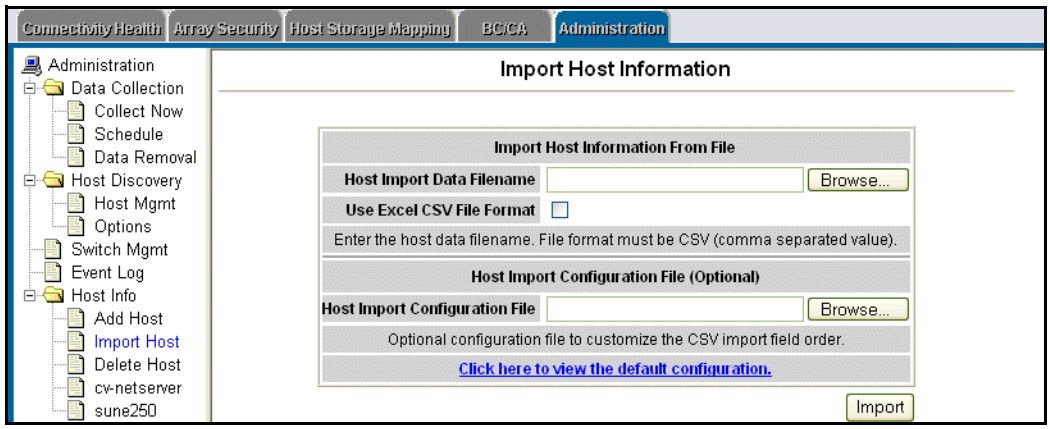
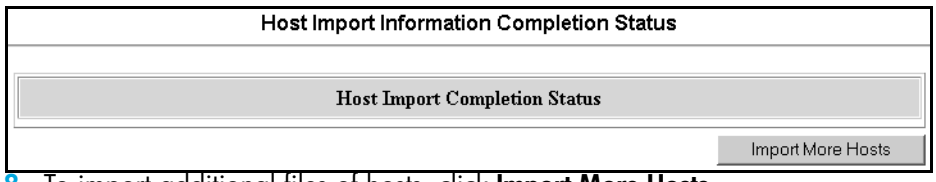


Figure 28 Host Info - Import Host Information pane

Importing a file of host information

1. Gather the host information that you want to store in the Path Connectivity database. Path Connectivity can store only the following type of host data: host domain name, IP address, WWN node, WWN port, device file name, TID, LUN, LDEV, CU, serial number, array port name, and emulation type.
2. Enter the host information in a CSV file. See "Host import CSV and configuration files" on page 47 for information about the structure of the CSV file.
3. From the Host Info - Import Host Information pane, enter the path and file name of the CSV file containing host data in the Host Import Data Filename field, or click **Browse** to locate and select the file.
4. If the file was created in Microsoft Excel, select the **Use Excel CSV File Format** check box.
5. If necessary, view the default order by clicking the **Click here to view the default configuration** link.
6. To import a file whose fields are configured in a different order than the default order, specify this order in a *config.txt* file. In the Host Import Configuration File field, enter the path and file name of the configuration file, or click **Browse** to locate and select the file.
7. Click **Import**. When the import operation completes, a completion status pane is displayed.



8. To import additional files of hosts, click **Import More Hosts**.

Host import CSV and configuration files

Path Connectivity expects the fields in the CSV file to fall in the following order:

- host_domain_name
- ipaddress
- node_wwn
- port_wwn
- device_file_name

- tid
- lun
- ldev
- cu
- serial_number
- array_port_name
- emulation_type

Path Connectivity interprets the first field to be a host domain name, the second field to be an IP address, and so on.

If the file data has a different field order, create a text file (*config.txt*) to control the field ordering. For example, the configuration file might specify:

```
host_domain_name=2
ipaddress=1
node_wwn=3
port_wwn=4
device_file_name=5
```

Sample rows

UNIX host

```
15.32.72.67,8/12.5,2100002a3765c059,2100002a3765c059,
/dev/rdsk/c0t1d0
```

Windows host

```
15.32.72.67,2.4.0.0,2100002a3765c059,2100002a3765c059,
\\.\PHYSICALDRIVE0
```

Host Info - Delete Host pane

Use the Host Info - Delete Host pane to delete a manually entered host record.

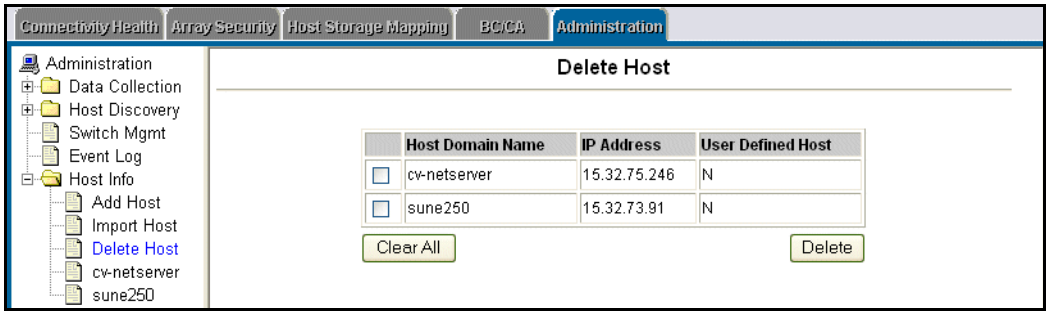


Figure 29 Host Info - Delete Host pane

Deleting a host

1. Select one or more host IP addresses, using the check boxes.
2. Click **Delete**.

Host Info - Host Information pane

The Host Information pane is displayed when you select a host from the navigation tree.

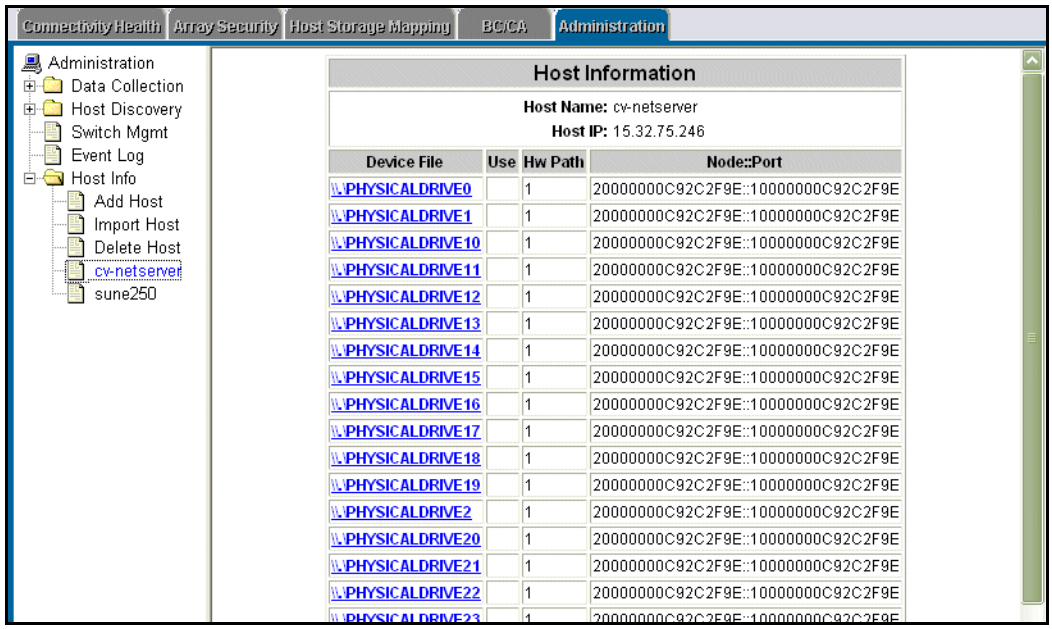


Figure 30 Host Information pane

This pane contains the following fields and columns:

- **Host Name**: The name of the selected host.
- **Host IP**: The IP address of the selected host.
- **Device File**: A listing of device files on the host. Click a device file link to go to the Modify Use of Device File pane and display the host data.
- **Use**: The use information entered when the host was added.
- **Hw Path**: The hardware path.
- **Node::Port**: The WWN for the host node and port associated with a device file.

Host Info - Modify Use of Device File pane

Clicking a device file on the Host Information pane displays the Modify Use of Device File pane. Use this pane to add or modify the use of a device file. For example, the use might be Marketing, Database, etc.

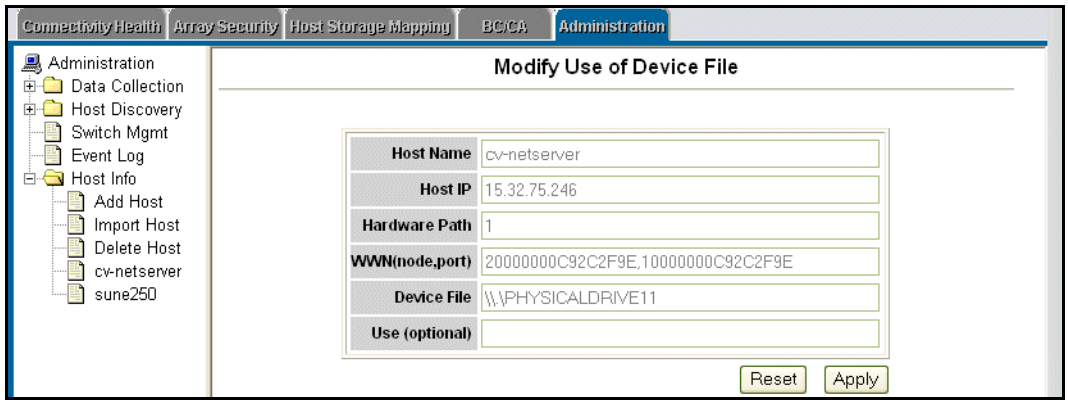


Figure 31 Modify Use of Device File pane

Modifying the optional Use field

1. Edit or enter the use information.
2. Click **Apply**.

A Troubleshooting

This chapter contains recommended solutions for the following troubleshooting topics about Path Connectivity:

- Path Connectivity is not collecting disk array data when using SSL, page 51
- The Path Connectivity screens do not display any data, page 52
- A switch in a path is missing on the Connectivity Health screen, page 52
- Some of the LUNs are missing after completing a host data collection, page 52
- The screen fonts and background color changed and/or the screen does not display any data, page 53
- The Diagnose Path feature takes a long time to complete, page 53
- The Connectivity Health screen displays deleted devices or obsolete paths, page 53
- Path Connectivity does not see the Sun or Linux host, page 53

For troubleshooting information about installing, configuring, and logging on to Command View, or for recommendations for solving host agent installation and configuration problems, refer to the *HP StorageWorks Command View XP installation guide*. For other Command View troubleshooting topics, refer to the *HP StorageWorks Command View XP user guide*.

Path Connectivity is not collecting disk array data when using SSL

Because the Command View management service communicates with the Apache Web server, the configuration must be modified when the Web server is configured for SSL operation.

The *ServletHost.cfg* file in the `C:\HPSS\CVManagementServer\config` directory contains the following lines:

```
# replace hostname with the correct
# hostname of CommandView server
SERVLET_URL=http://localhost/hpstmgmt/servlet/MarsDm
#Use the below for SSL based communication
#SERVLET_URL=https://localhost/hpstmgmt/servlet/MarsDm
```

Edit this file to read as follows:

```
# replace hostname with the correct
# hostname of CommandView server
#SERVLET_URL=http://localhost/hpstmgmt/servlet/MarsDm
#Use the below for SSL based communication
SERVLET_URL=https://localhost/hpstmgmt/servlet/MarsDm
```

Note that the SERVLET_URL property should start with **`https`**.

For more details on SSL configuration, refer to the *HPSS Apache White Paper* located under the **Support** tab.

The Path Connectivity screens do not display any data

If you do not see any data when using Path Connectivity, try the following:

1. Verify that the Command View XP host agents are installed and running in the hosts.
2. If your Command View management station and the hosts are located in different firewall/subnet, click **Administration > Host Discovery > Host Mgmt** to add the hosts that are located outside your Command View management station's firewall/subnet.
3. Verify that the disk arrays you want to manage are added from the Device Administration screen and that the **Manage Array** check box is selected.
4. If there are switches between your hosts and disk arrays, verify that you had added the switches under **Administration > Switch Mgmt**.
5. Select all the check boxes and click the **Collect Now** button in **Administration > Data Collection > Collect Now**.
6. Wait for 5 to 10 minutes, you should be able to see the new data in the screen when you click the tab again.

A switch in a path is missing on the Connectivity Health screen

You may not have added the switch to the system. To solve this problem:

1. Add the switch by going to **Administration > Switch Mgmt**.
2. After adding the switch, go the **Administration > Data Collection > Collect Now**.
3. Select the **Collect FC Switch Data Now** check box.
4. Click the **Collect Now** button. After the switch data collection has completed, the screen should display the new host HBA/WWN/XP disk array port path through the switch.

NOTE: Because the Connectivity screen caches all paths and their status, the obsolete direct-attached path Health will be set to the CRITICAL state. Obsolete paths are maintained until the Command View XP system is restarted.

Some of the LUNs are missing after completing a host data collection

One or both of the following situations may cause this condition:

- LUNs were added or removed, but the device files of the host is still associated with the LUNs. After adding LUNs or removing LUNs, the host computer may need to be restarted, the HBA driver may need to be reloaded, or the operating system may need to scan all the disk devices again. For example, a HP-UX host, doing an ioscan and insf, or for a Solaris host, doing a drvconf and disks may be sufficient.
- The host computer is under heavy I/O operation or some device files are being opened for extensive amount of time. The data collection agent may not be able to access these busy LUNs and collect information from them. The default data collection schedule is set to 2 a.m. on Sunday morning with the assumption that the host will not be busy at that time. Users can collect data from a specific host at any other time by going to **Administration > Collect Now** and selecting the hosts from the host list.

The screen fonts and background color changed and/or the screen does not display any data

If you are using Netscape and your session has timed out, you may have encountered a known JavaScript error.

After the Path Connectivity session timeout while using Netscape, the session timeout warning box is not displayed. You will notice that the Path Connectivity screen fonts and background color have changed, and the Admin screen does not display any data.

To solve this problem, close the browser and restart a new one. This issue will not affect any of the Command View's functions.

The Diagnose Path feature takes a long time to complete

If diagnosing a path is taking a long time, some possible causes could include the following:

- The host computer is under heavy CPU and/or I/O load.
- The Command View Management Server computer is under heavy CPU and/or I/O load.
- A Fibre Channel cable is disconnected.

  Example: An HBA has a path to the disk array port, through a switch. Disconnecting the cable from the disk array port can hang both the switch port and the host HBA port and driver. The Connectivity Health screen will identify the path as CRITICAL, but when using the Diagnose Path feature, the diagnosis process can take as long as 15 minutes when there are 10 or more device files for that path. The long diagnosis process strongly suggests that a FC cable has been pulled or damaged. The Diagnosis Results messages may not state this result.

The Connectivity Health screen displays deleted devices or obsolete paths

The Path Connectivity topology system updates its list of devices and paths, and their health status approximately every 45 seconds. Try the Connectivity Health screen again after approximately 45 seconds have elapsed since deleting a host or a host HBA port.

Path Connectivity does not see the Sun or Linux host

The Path Connectivity utility uses the Storage Networking Industry Association (SNIA) standard interface to auto-discover the host bus adapter (HBA) information from a device.

If the HBA driver within your system does not support the SNIA standard, Path Connectivity is not able to discover and map the related host information.

For a list of HP supported HBAs and drivers, refer to "Supported host bus adapters (HBAs) for Path Connectivity" on page 13.

You can also manually enter a host. For more information about this, refer to "Host Discovery - Host Management pane" on page 43.

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